

IP12_002706

BABCOCK BORSIG POWER

Daniel R. Coates

Senior District Field
Engineering Manager

Energy Systems and
Services Division

Babcock Borsig Power, Inc.

5 Neponset Street
Post Office Box 15040
Worcester, MA 01615-0040

Telephone: (508) 245-1472
Fax: (508) 854-4059
E-mail: dcoates@bbpwr.com

Babcock Borsig Power Inc.
5 Neponset Street
Worcester, MA 01606
TEL: (508) 852-7100
FAX: (508) 853-3944

FACSIMILE TRANSMITTAL

NAME: MR. Phil Hailes **FAX:** 435-864-6670
COMPANY: Inleurnountain Power **DATE:** 11/7/02
FROM: George King **PAGES:** 5 with cover
SUBJECT: Preliminary test Guideline
CC: _____

Message:

Phil,

If you have any questions and any comments.

Thanks

George King

Pre installation mill testing for rotating throat at Intermountain Power Station

1.0 Introduction

There are two (2) 950 MW B&W balanced draft units at Intermountain Power Service Corp. (IPSC). Each unit is fired with a total of 48 burners arranged with 24 burners on opposite walls. Steam flow is 7,000,000 pph SH and 5,500,000 pph RH. Steam conditions are 1005/1005 °F and 2540/580 psig SH/RH, respectively.

There are eight (8) B&W MPS 89 mills in the fuel handling system per unit. Each mill feeds six (6) burners. Currently, the unit operates with seven (7) mills for full boiler load requirement. The fuel flow is about 50 tph per mill

Based on Contract 201042 awarded by IPSC, BBPI will retrofit the existing stationary throat in Mill 1B with a rotating throat designed by BBPI. According to BBPI Proposal No. 501103 Rev.2, IPSC will perform pre-and-post-installation mill baseline/performance testing on the same mill to evaluate the performance of the rotating throat. BBPI will witness the testing.

The fuel analysis of the coal currently burned at the plant is as follows. This was provided by IPSC and is used as the design basis for the new supplied rotating throat.

HGI 48
%H₂O 8.06
HHV Btu/lb 11,761

%Ash 9.36
% Sulfur .57
% Volatile 34.07
% Na₂O 2.22
Softening Temp 2,194

2.0 Test Objective

To obtain the data of mill performance with the existing stationary throat. These data will be used to compare/evaluate the performance of new supplied rotating throat.

3.0 Test matrix and mill control setup

		Mill control	Sample requested	Sample analysis
1	Max. mill load	<ul style="list-style-type: none"> • Feed rate manual. • PA flow, mill exit temperature, roller loading seal air all to be set at automatic 	<ul style="list-style-type: none"> • One raw coal sample from coal feeder per test run. • Pulverized coal sampling for all six coal pipes 	<ul style="list-style-type: none"> • Raw coal samples: Approx., ult., HGI • Pulverized coal samples: Moisture, fineness
2	80% mill load	Same as above	Same as above	Same as above
3	60% mill load	Same as above	Same as above	Same as above

11/7/2002
MPS Mill testing procedure @ IP v1.doc

Notes:

1. Mill needs to be stabilized at least one (1) hour before each test.
2. Data acquisition time should be scheduled to align with the sampling time period.
3. All samples should be split for separate analysis by BBPI Lab in Worcester *Raw & Pulverized.*
4. Primary airflow measurement (PA duct traverse) is required for each test. Dirty air testing may be used as a substitute if PA duct traverse is not available.

IPSC - no dirty air probe.

4.0 Data acquisition

The attached boiler and mill system data sheets should be completed every hour for each test run. Computer screen print-out may be used as supplements only to these data sheets.

5.0 Manpower required for the test:

IPSC:

- Two (2) people for pulverized coal fineness testing, and dirty air testing if applied
- One (1) person for data acquisition aligned with the sampling time period
- If need to perform primary airflow measurement by PA duct traversing, another two (2) people are required in order to align primary airflow measurement with the sampling time period.

BBPI:

- One FED engineer for witness

6.0 Testing tool/instrumentation

- Coal fineness sampling kit for pulverized coal fineness testing
- Clean air or dirty air testing kit for Primary airflow measurement
- Sample bags for fineness samples and for raw coal samples.

Note:

1. BBPI will provide testing tool/instrumentation upon IPSC request.
2. BBPI recommends IPSC to purchase one (1) field service engineer per diem for the assistant of performing fineness and clean or dirty air test.

Wednesday, Dec. 11

MPS mill test data sheet **For rotating throat at Intermountain Power Station**

Date				
Time				
Unit				
Unit load, MW				
Boiler steam flow, kpph				
Turbine throttle press., psig				
Air heat outlet temp., °F				
ED fan disch. Press., "wc				
Windbox press., "wc				
Barometric press., "Hg				
Relative humidity, %				
Mill system control room data				
Mill no.				
Air flow, kpph				
Fuel flow, kpph				
Mill inlet temp., °F				
Mill outlet temp., °F				
Hot air damper, %LDG				
Tempering air damper, %LDG				
PA air damper, %LDG				
Seal air damper, %LDG				
Mill inlet press, "wc				
Mill outlet press., "wc				
Seal air header press., "wc				
Seal air differential, "wc				
Roller loading press., psig				
PA fan & mill bus voltage				
PA fan motor amps				
Mill motor amps				
Mill system local data				
Mill inlet temp., °F				✓
Mill outlet temp., °F				✓
Mill temp. below classifier, °F				
Hot air damper, %LDG				✓
Tempering air damper, %LDG				✓
PA air damper, %LDG				✓
Seal air damper, %LDG				✓
Mill inlet press, "wc				✓
Mill outlet press, "wc				
Mill press. below classifier, "wc				

11/7/2002
MPS Mill testing procedure @ IP v1.doc

IPSC Unit #1, Mill 1B
MPS 89 mill testing
201042

BABCOCK BORSIG POWER 
ENERGY SYSTEMS & SERVICES

11/7/2002
MPS Mill testing procedure @ IP v1.doc

NO. 802 P. 5

NOV. 7. 2002 8:44AM DB RILEY PROP OPER

IP12_002711

From: Phil Hailes
To: dcoates@bbpwr.com; James Nelson
Date: 11/11/02 1:11PM
Subject: Re: Mill Data

Dan,

Since I returned your call this morning, I've spoken with George King, which changes the picture quite a bit.

Because of the delay in shipping the new throats, it's not known which mill the new throats will eventually be installed in. That being said, it would not seem necessary to perform the test to the extent that you are hoping for this week, since we don't know which mill the throats will actually be going in. Are you still wanting to expend BBP money testing a mill with worn throats that may or may not get the new BBP throats installed?

At this point, we are awaiting information from BBP as to when the new throats will actually be shipped. Then we can decide which mill to install them in as well as the timing of the installation.

Is the intent of your test to gather general performance data about MPS mills, or to verify improved performance that can be attributed to rotating throats?

Thanks
Phil

>>> <dcoates@bbpwr.com> 11/11/02 12:20PM >>>

Our performance goals for the new throat are exactly the same as Intermountain Powers.

Item 2 of the test procedure was not intended to imply that our target was to improve the performance from the worn throat condition. Our interest is only in getting operating data on the mill to better understand where the primary air flow and coal flow is now, as we don't have any data on this or any of the other mills.

As the OEM for present day MPS mills, we are interested in how the mills are running. This data, along with the post installation data will provide us with the information we need. A thorough review of how the mills are running now and post throat installation may reveal some areas where performance can be further improved in addition to the new throats, and we would like to be in a position to make recommendations if warranted.

To that end, I understand the schedule for testing is set for Wednesday, November 13th. Is this date still on?

Will we be able to collect the primary air flow data for the mills along with feeder calibration? We are also hopeful that the data listed on the data sheets will be available as well.

We generally traverse the PA duct @ 3 to 5 load points, in the vicinity of the Primary air flow Pitots. The traverse data, along with the Pitot array data is used to develop the "K" factor and a calibration curve for the pitot array. An alternative is to traverse the coal pipes with the mill out of service and use the total calculated flow in the coal pipes, which would include seal air, to develop the calibration curve.

I left you a message last Friday asking if the November 13th date was confirmed as we are making arrangements to be there. I will follow up with a phone call to you today.

Attached is the contact sheet for BBP people that cover the Four Corners States.

Best Regards,

Dan Coates

District Service Mgr.

(See attached file: BBP Contacts 4 Corners.doc)

This email and any files transmitted with it are confidential and intended solely for the use of the individual or entity to whom they are addressed. If you have received this email in error please notify the system manager.

This footnote also confirms that this email message has been scanned for the presence of computer viruses.

CC: Garry Christensen; gking@bbpwr.com; pknight@bbpwr.com; qlin@bbpwr.com

From: <dcoates@bbpwr.com>
To: <phil-H@ipsc.com>, <jim-N@ipsc.com>
Date: 11/11/02 12:26PM
Subject: Mill Data

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CC: <qlin@bbpwr.com>, <gking@bbpwr.com>, <pknight@bbpwr.com>

Babcock Borsig Power Inc.
5 Neponset Street
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11/7/2002
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MPS mill test data sheet
For rotating throat at Intermountain Power Station

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Time				
Unit				
Unit load, MW				
Boiler steam flow, kpph				
Turbine throttle press., psig				
Air heat outlet temp., °F				
ED fan disch. Press., "wc				
Windbox press., "wc				
Barometric press., "Hg				
Relative humidity, %				
Mill system control room data				
Mill no.				
Air flow, kpph				
Fuel flow, kpph				
Mill inlet temp., °F				
Mill outlet temp., °F				
Hot air damper, %LDG				
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Roller loading press., psig				
PA fan & mill bus voltage				
PA fan motor amps				
Mill motor amps				
Mill system local data				
Mill inlet temp., °F				
Mill outlet temp., °F				
Mill temp. below classifier, °F				
Hot air damper, %LDG				
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11/7/2002
MPS Mill testing procedure @ IP v1.doc

IPSC Unit #1, Mill 1B
MPS 89 mill testing
201042

BABCOCK BORSIG POWER 
ENERGY SYSTEMS & SERVICES

11/7/2002
MPS Mill testing procedure @ IP v1.doc

NOV. 08 2002 P. 5

NOV. 7. 2002 8:44AM DB RILEY PROP OPER

IP12_002720

From: Phil Hailes
To: cpenterson@bbpwr.com; gking@bbpwr.com; James Nelson; qlin@bbpwr.com;
rfaia@bbpwr.com; tmartinko@bbpwr.com
Date: 11/11/02 11:05AM
Subject: Delivery Delayed on BBP Rotating Throats

I've been on the phone with George King this morning. Because of pattern problems with the new throats, delivery of the new rotating throats will be delayed.

On Tues, Nov 19, a new casting will be attempted with a new pattern. If things go well, the expected shipping date of new throats will be **Fri, Dec 13**. If things do not go well next week, the earliest shipping date would slip to **Fri, Jan 3, 2003**.

We must be informed immediately, of any changes to these dates. Of necessity, we must sequence our mill outages and replacement throats based on mill wear. If we can not install the BBP throats, we are forced to purchase other hardware since the existing throats still need to be changed. Because of the potential problem with lead times in getting other new hardware, please let us know of any schedule changes as soon as possible.

Phil Hailes

IP12_002721

From: Phil Hailes
To: cpenterson@bbpwr.com; gking@bbpwr.com; James Nelson; qlin@bbpwr.com;
rfaia@bbpwr.com; tmartinko@bbpwr.com
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Phil Hailes

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Phil Hailes

IP12_002723

From: <gking@bbpwr.com>
To: <phil-h@ipsc.com>
Date: 1/7/03 6:54AM
Subject: Rotating Throat air nozzles, 201042

Phil,

The following information is per our conversation on the afternoon of 1-6-03.

The planned ship date of January 15, 2003 can not be met, the reason is as you know is the pattern, the pattern has been very difficult to make due to the angles and shape of the of the vanes.

At the present time we have three air nozzles completed at the foundry they will be normalized before shipping to the machine shop. The three air nozzles are to be shipped out today 1-7-03 for machining, the completed machined air nozzles will be bolted together inspected to insure that the air nozzle vane mates up with the air nozzle vane on the mating air nozzle piece.

The air nozzle inspection completed and all dimensions checked and the vane alignment check, then the remainder of the air nozzles will be poured, normalized and machined.

The best ship date at this time is February 15, 2003 I will do my best to improve on the deliver time after the inspection of the three air nozzles that are being machined. I will keep you informed on the progress of the air nozzles.

Phil I will be out of the office from January 8,9 and 10th I will be at a job site doing QA/QC work on roof tube replacement from steam drum out 10ft. to cut line.

Should you need a contact you can call Fran Ouellette at 508-854-3892, you can also call me and leave me a voice mail I do check my voice mail every day.

Any questions please call me.

Thanks
George

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BABCOCK BORSIG POWER
ENERGY SYSTEMS & SERVICES

Fax Cover Sheet

Fax: (508) 852-7548 or (508) 852-7558

Tel.: (508) 854-3822

DATE: July 9, 2002

FAX TEL.#: 435 864 6670

NAME OF COMPANY: Intermountain Power

ATTN: Phil Hailes

PAGES: 1/6

RE: Throat sketches

FROM: Qingsheng Lin

Mr. Hailes:

Attached are sketches of different throat designs. Please review them and then we can talk later. I'd also like you to send us the sketch shown what you expect.

Regards;

Q. Lin

IP12_002725

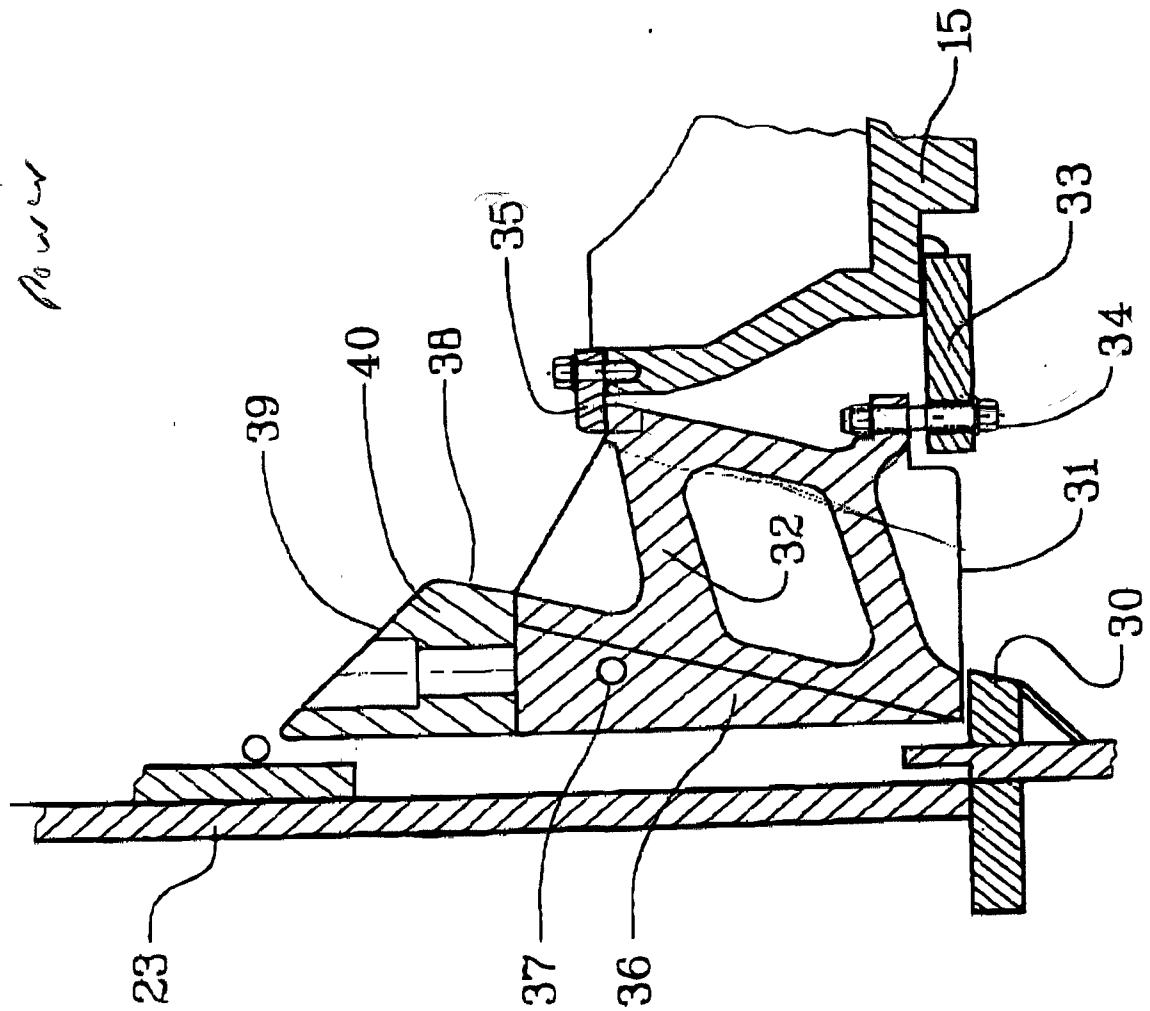
43-001-0010

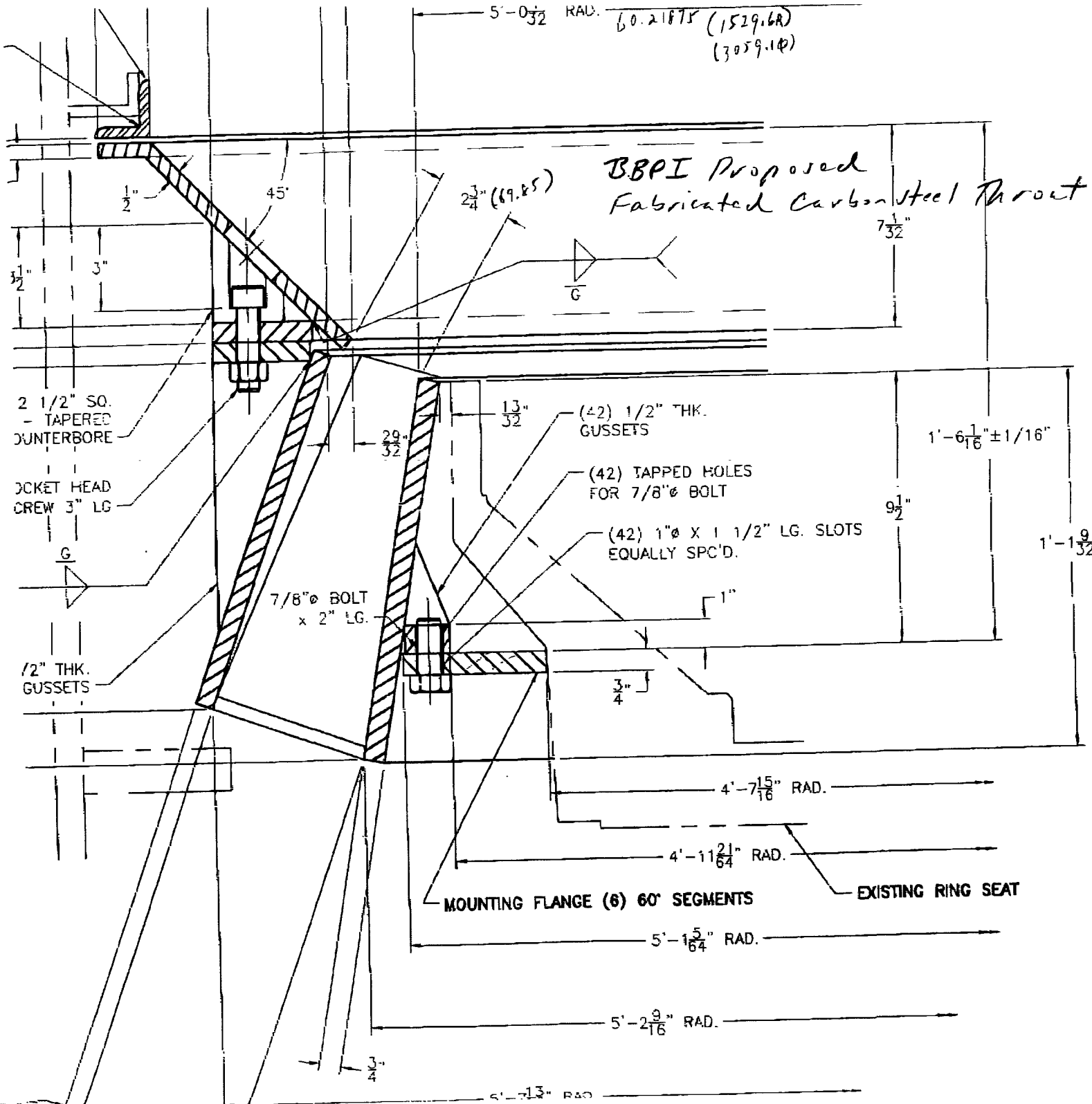
5,549,251

Sheet 2 of 4

Aug. 27, 1996

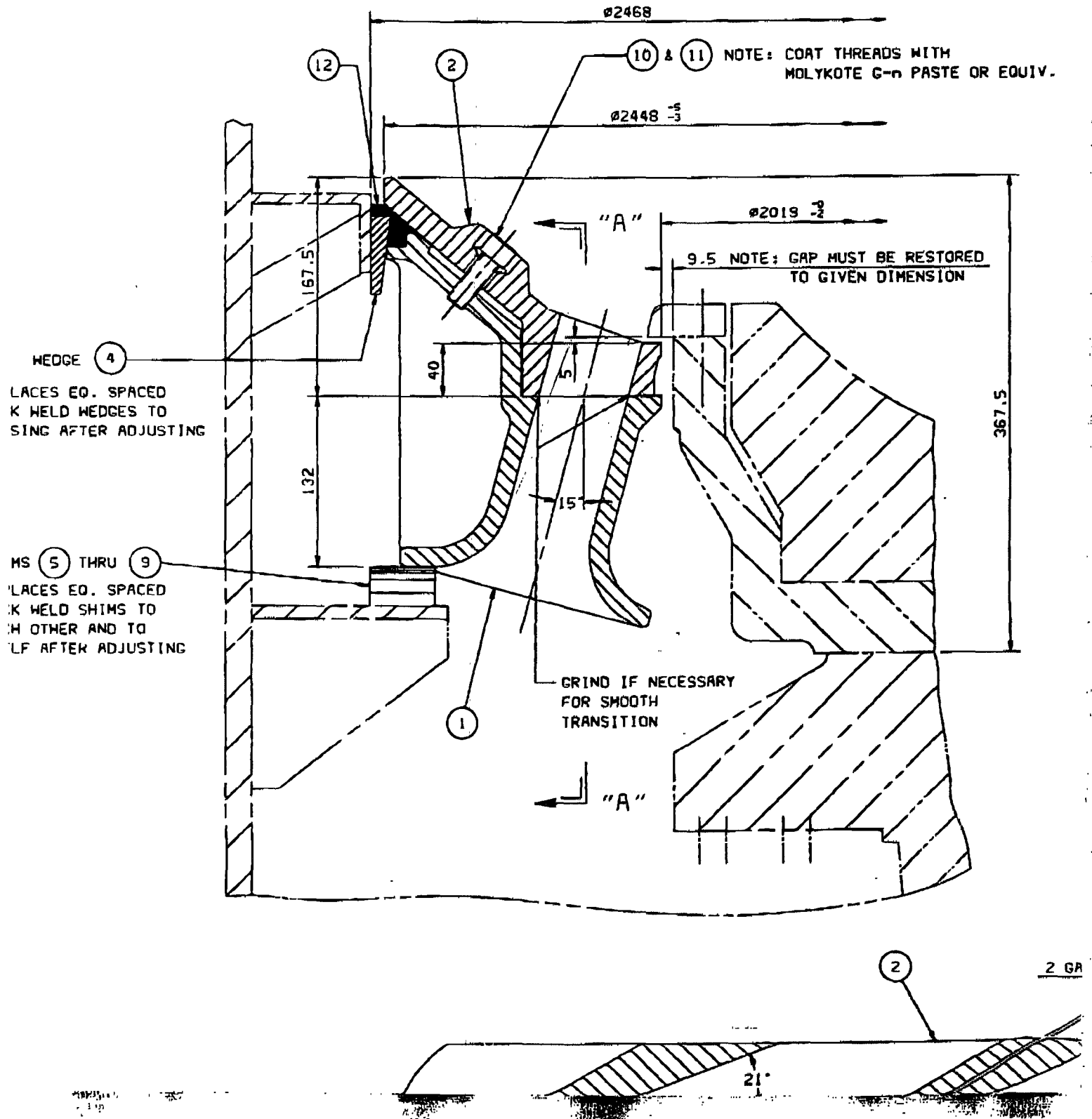
Technomic Design
Existing @ International
Power





IP12_002727

Germany Fixed Nozzle
Design - Stationary Throat
Can be converted to rotating design



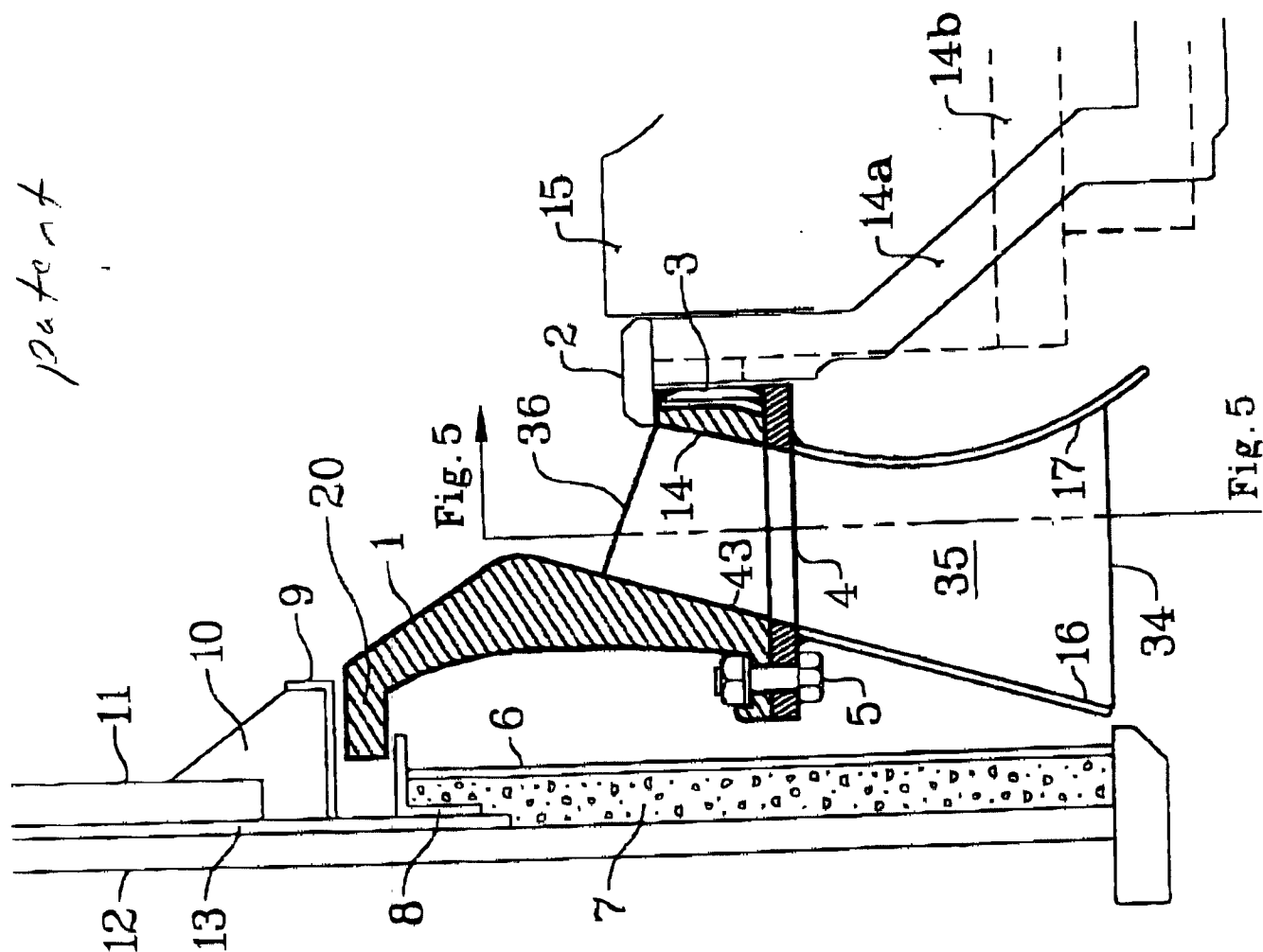
IP12_002728

Patent

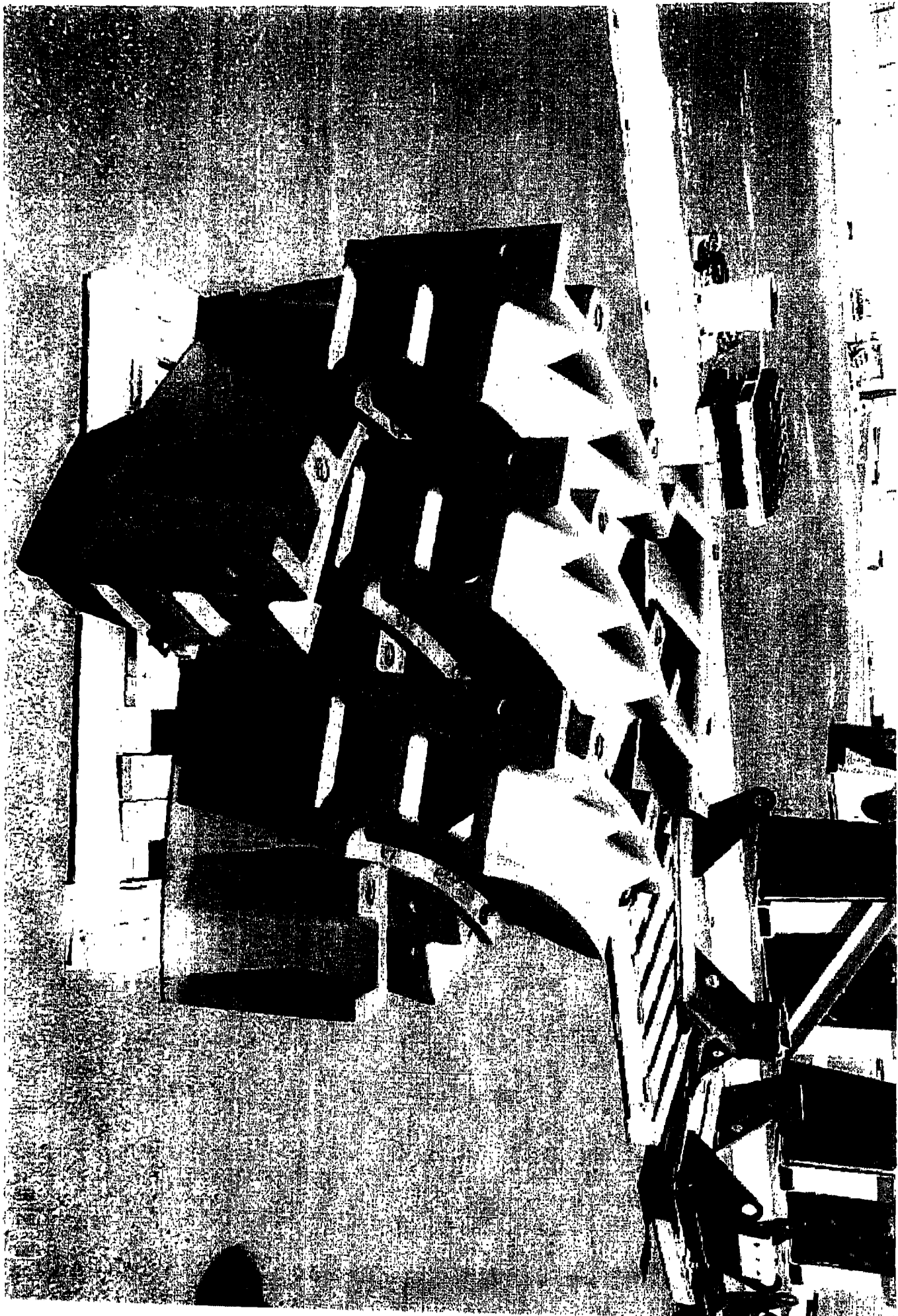
Jun. 1, 1999

Sheet 4 of 5

5,908,167

*Technomic Latent
Patent*

IP12_002729



Existing Technomic Design @ JIP

TOTAL P.06

IP12_002730

BABCOCK BORSIG POWER

July 23, 2002

Intermountain Power Service Corp.
850 W. Brush Wellman Road
Delta, UT 84624-9546

w/o # 0383836-D
Cost Center 156K-401
Reg # 183082

ATTN: Mr. James Nelson

RE: Rotary Throat Retrofit Project
BBPI Proposal No. 501103 Rev. 2

Dear Mr. Nelson:

In accordance with your request, and subsequent telephone conversations with your Mr. Phil Hailes, we are pleased to submit, for your consideration, two (2) copies of our proposal 501103, Rev. 2 to retrofit a state-of-the-art Babcock Borsig Power rotating throat assembly to your existing MPS 89G pulverizer, designated 1B.

Our proposal to provide the necessary engineering, conversion kit materials, and field supervision to accomplish this retrofit was previously presented in two phases. Phase I test components fabricated from plain carbon steel and Phase II final design components fabricated from special wear resistant materials. Per your most recent request, we will now waive Phase I and provide one (1) rotary throat assembly cast from carbon steel material with special nozzle contour, as generally shown on drawing FED 071902-00. The throat assembly will be supplied in (12) segments to be bolted and welded in place by IP. Performance testing will be performed by IP and witnessed by BBPI. Also, since mill 1B employs a stationary throat, BBPI will provide necessary detail drawing(s) for IP to fabricate a new mating flange assembly necessary for conversion to rotary throat.

Our objective is to improve existing mill performance focusing on the following criterion guidelines:

- 1. Throughput (at 90% speed) mill throughput
- 2. Throughput per 100% of 200 mesh
- 3. Throughput per 100% of 200 mesh
- 4. Throughput per 100% of 200 mesh
- 5. Throughput per 100% of 200 mesh
- 6. Throughput per 100% of 200 mesh
- 7. Throughput per 100% of 200 mesh
- 8. Throughput per 100% of 200 mesh
- 9. Throughput per 100% of 200 mesh
- 10. Throughput per 100% of 200 mesh
- 11. Throughput per 100% of 200 mesh
- 12. Throughput per 100% of 200 mesh

Babcock Borsig Power, Inc.
Energy Systems and Services Division

Mailing Address:

Post Office Box 15040
Worcester, MA 01615-0040

Shipping Address:

5 Neponset Street
Worcester, MA 01606

Telephone: (508) 852-7100
Fax: (508) 852-7548

www.bbpwr.com

IP12_002731

Pre and post retrofit mill baseline data will be provided by IP to develop a quantitative comparison of performance. If mill performance improvements are demonstrated to the satisfaction of IP, BBPI will invoice IP the cost of the retrofit program as follows:

- Field trip by (2) BBPI fuel burning engineers to obtain operational data, dimensions and arrangement drawings of the subject retrofit MPS 89G mill. IP will provide or assist BBPI to collect/verify relevant existing mill dimensions and drawings, which may include to open and prepare the mill for inspection and table measurements. The mill selected should be the one intended to receive the new rotating throat. (This phase of the retrofit program is complete.)
- Preparation of cast rotating throat retrofit kit drawings, including mating flange adaptor drawings.
- One (1) set of multiple rotating throat bolted/welded segments cast from carbon steel will be provided with associated bolting hardware, seals, fabricated ledge cover and ring, including recommended field welding procedures to install (12) adjacent radial segments together.
- One (1) service engineer for (6) days [(2) days to witness baseline testing, (2) days to advise and consult during field assembly, and (2) days to witness final performance testing.] *Per file is optional*

Price for cast rotary throat assembly made from carbon steel is:

..... (\$25,000 material plus \$2,500 witness testing)

Optional price for cast rotary throat assembly made from wear resistant material is:

..... (\$28,500 material plus \$2,500 witness testing)

All pricing F.O.B. Delta, Utah.

The program schedule for the cast rotary throat assembly will be as follows:

• Drawing Preparation	.....	2-3 Weeks
• Drawing Review and Approval	.....	1-2 Weeks
• Pattern Development	.....	3-4 Weeks
• Casting	.....	9-12 Weeks
• Delivery	.....	1 Week
• Installation	.....	1 Week
Total Estimated Phase II Program	.....	17-23 Weeks

Intermountain Power Service Corp.

July 23, 2002

Page 3

The BBPI rotary throat design directly impacts mill performance, such as mill pressure differential, primary air and coal distribution in the grinding zone, and pre-classification of pulverized coal. Babcock Borsig Power has conducted throat optimization studies to achieve enhancement in throat performance with lower pressure drop and better primary air and coal distribution. Currently, it is our engineering standard design to provide rotating throats with all new MPS mills. The rotating throat distributes primary air and coal flows more evenly and minimizes the impact of throat wear by producing more uniform wear on the throat. We are offering a BBPI standard proven stationary throat nozzle design, which very closely resembles IP's preference, based on extensive research and experimentation with other manufacturers. Also, BBPI will perform CFD modeling and share results and computational data with IP, for no extra charge.

Our standard "Short Form Materials" Terms and Conditions have been attached for your consideration, as well as service per diem terms and rates for out of scope days.


In anticipation of your authorization to proceed, we have completed the required field inspection and initiated drawing preparation. Mating flange adaptor drawings will be submitted within (2) weeks after award of an order.

If you have any questions, please do not hesitate to contact us. Our Mr. Tom Martinko will be contacting you subsequently to entertain any questions you may have regarding our proposal.

Thank you for your continued interest in Babcock Borsig Power, world-class leaders in coal size reduction technology.

Very truly yours,

Babcock Borsig Power, Inc.



Robert V. Faia

National Director of Business Development
Services Division

RVF/pjh

cc: B. Leblanc T. Martinko
C. Penterson K. Davis
K. Toupin B. Kennedy
Q. Lin

IP12_002733

Babcock Borsig Power, Inc.
TERMS AND CONDITIONS - MATERIALS
(SHORT FORM)

1.0 GENERAL

Babcock Borsig Power, Inc. hereinafter called "Company" shall perform, and the Purchaser agrees to purchase, the proposed equipment ("equipment") in accordance with the terms and conditions contained herein.

2.0 PRICE AND TERMS OF PAYMENT

The price is as specified in the Company's proposal or quotation. Unless otherwise agreed, the price shall be valid only for sixty (60) days from the date submitted and terms of payment shall be net 30 days from date of invoice. Prorated billings shall be permitted for partial shipments or work performed.

3.0 DRAWINGS

If Materials were designed by Company, any drawings furnished for Purchaser's evaluation may contain confidential information, and may not be copied or used for any other purpose. All such drawings will be returned upon Company's request. If Materials are in-kind replacements to be fabricated from Purchaser's drawings, the Purchaser shall furnish to the Company all information, instructions and details requisite for execution of the work.

4.0 TRANSPORTATION

Unless otherwise specified in the Company's quotation, all shipments shall be made F.O.B point of origin. Unless otherwise provided, the price is exclusive of freight charges, which will be to Purchaser's account. The type of transportation and the routing shall be decided by Purchaser. Unloading, hauling and handling between the points of delivery and job site shall be Purchaser's responsibility.

5.0 TIME OF SHIPMENT DELIVERY

All shipments or delivery dates either referenced by the Company or requested by the Purchaser shall be interpreted to mean "estimated" shipment or delivery dates only, and shall not be construed as falling within the meaning of "time is of the essence". In no event shall the Company be liable for any loss or damage resulting from delays in the performance of the work.

6.0 DELAYS AND FORCE MAJEURE

The Company shall not be liable for any expense, loss or damage for failure to supply materials or supervision as required because of fire, flood, Acts of God, strikes, labor shortages or disputes, riots, act of terrorism, thefts, accidents, transportation delays, acts or failure to act of Government or purchaser or any other cause whatsoever, whether similar or dissimilar to the above, beyond the reasonable control of the Company. In the event of such delay, the time of completion and contract price will be subject to adjustment.

7.0 TAXES

Unless otherwise provided, the price stated in the Company's quotation is exclusive of any applicable sales, use, ownership, excise or other similar taxes. If the Company is required by law to collect and/or pay any such tax, the Purchaser shall reimburse the Company for the full amount of such payment. Rulings of authorities in charge of the administration of such law that a tax is payable shall be final and binding upon the Purchaser.

8.0 WARRANTY/REMEDY

The Company warrants to the original purchaser its materials and workmanship against detrimental defects. The warranty duration shall be one year from first use, but in no event longer than 18 months from shipment.

THE COMPANY MAKES NO OTHER REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES INCLUDING THE WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

In the event of a detrimental defect in materials or workmanship, the Company's sole liability and Purchaser's exclusive remedy for breach of said warranty or for other claims arising under this warranty for any cause whatsoever, including negligence, irrespective of whether such defects or claims are discoverable or latent shall be, at the Company's option, to repair, on a straight time basis, or provide replacement parts. Removal and reinstallation expense and/or work and transportation costs are not part of this warranty and are to Purchaser's account. Purchaser may not backcharge the Company for warranty claims without the Company's prior written consent. Equipment repaired, rebuilt or modified by Purchaser or other third parties without Company's consent carries no warranty, either express or implied. This warranty does not cover the effects of normal wear or abuse of the equipment, abrasion, erosion or corrosion. The company does not warrant that the operation of the equipment will comply with any laws or regulations governing environmental impact.

This warranty is conditioned upon prompt notice of the particular detrimental defects within ten days of discovery, proper use and maintenance of the equipment, reasonable access to the Company to inspect the equipment and no further damage to the equipment from acts of Purchaser or third parties after discovery of the defect.

9.0 CHANGE ORDERS

Without invalidating the contract, the Purchaser may order changes in the work by altering, adding to or deducting from the work, or to add correlated work not covered by the contract, or to make provision for changed conditions of this contract. All such changes in the work shall be authorized by written change order and shall be approved by both parties. If any revision necessitates a price or time adjustment, the contract will be amended accordingly.

10.0 COMPANY REPRESENTATIVES (if included in original scope or added by Purchaser)

Any representative provided by the Company shall perform the service in an advisory or consulting capacity and on a "reasonable efforts" basis. The representative may give reasonably complete instruction, but shall not exercise supervision. No Company representative is licensed or authorized by the Company to operate equipment, and shall not be requested to do so by Purchaser..

11.0 TITLE AND RISK OF LOSS

Title to the equipment delivered or placed into storage will pass to Purchaser upon receipt of payments, except that the Company shall retain a security interest in any equipment not paid for in full. The risk of loss or damage to the equipment shall pass to Purchaser at the f.o.b. point.

12.0 PATENTS

To the extent that any goods furnished hereunder are made to Purchaser's specifications, Purchaser shall at its expense defend any suit brought against the Company based on a claim that such goods infringe any United States patent claims, provided that Purchaser is given prompt notice of such claim and full cooperation of the Company to defend and compromise such claim. In any such suit, Purchaser shall pay all costs and damage awarded against the Company.

13.0 SERVICE AND OPERATING INSTRUCTIONS

Service guides and operating instructions, if required to be furnished, are to assist licensed operators in the use of the equipment furnished by the Company. They are not intended to cover every possible contingency or variation in the equipment, but rather to complement the judgement of the licensed operator whose duty it is to make the final decision in a particular circumstance.

14.0 LIMITATION OF LIABILITY

The Company's liability on all claims of any kind (excluding death or bodily injury), whether based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise, for all losses or damages arising out of, connected with, or resulting from this order, or from the performance or breach thereof, or from any equipment or services covered by or furnished under this order or any extension or expansion thereof (including remedial warranty efforts), shall in no case exceed the contract price. Except as to title all such liability shall terminate upon the expiration of the warranty period. In no event, whether based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise, shall the Company, its employees, subcontractors and suppliers be liable for special, incidental, indirect, exemplary or consequential damages under any cause or form of action whatsoever. This Limitation of Liability shall prevail over any conflicting or inconsistent provision contained in any item or document which comprises the contract. The remedies provided herein are exclusive.

15.0 GOVERNING LAW

The validity, construction and performance of this agreement shall be governed by the law of the Commonwealth of Massachusetts.

16.0 ARBITRATION

All disputes arising in connection with the Agreement shall be finally settled by arbitration. The arbitration shall be held at Worcester, Massachusetts, and conducted in accordance with the rules of the American Arbitration Association. Judgment upon the award rendered may be entered in any court having jurisdiction or application may be made to such court for judicial acceptance of the award and an order of enforcement, as the case may be.

17.0 CANCELLATION

The Company may terminate this agreement by written notice to the Purchaser if a petition is filed by or against the Purchaser under the bankruptcy laws, or if the Purchaser makes a general assignment for the benefit of its creditors, or if a receiver is appointed for any property of the Purchaser, or for Purchaser's willful failure without cause to make payment on any application for payment within thirty (30) days from submission thereof. Such termination shall be without prejudice to any of the legal rights and remedies the Company may possess to recover any amounts due under the contract. In the event the Purchaser wishes to cancel for convenience, Purchaser shall pay the Company the following charges, which sum shall be greater of either: (a) the expense incurred by the Company to date of cancellation, including costs incidental to Purchaser's cancellation, plus overhead and profit; or (b) fifteen percent (15%) of the total contract price.

18.0 ENTIRE AGREEMENT

There are no understandings between the parties hereto as to the subject matter of this agreement other than as set forth herein. Any provisions of a purchase order or specification which may be issued hereafter shall not be binding on the parties unless duly approved in writing by an authorized representative of each party.

Revised: 11/07/2001

Babcock Borsig Power, Inc.
TERMS AND CONDITIONS

COMPANY REPRESENTATIVE, ENGINEERING AND TEAM INSPECTION SERVICES

1.0 GENERAL

Babcock Borsig Power, Inc. ("Company") shall provide the services of Company Personnel to inspect or advise and consult with the Purchaser regarding Purchaser's equipment and/or furnish engineering personnel to perform technical services, as specified in the Company's proposal.

2.0 SCOPE AND PERFORMANCE OF SERVICE

The scope of the service, including the extent and nature of any equipment inspection, shall be as defined in the Company's proposal. Work or services not specifically included in the Company's proposal, or inspection of equipment not specifically mentioned therein, is expressly excluded from the Company's responsibility.

A Company representative that advises and consults with Purchaser's representatives may give reasonably complete instructions, but shall not supervise nor be deemed to be exercising supervision.

The Company shall perform its work on a "reasonable efforts" basis.

THERE ARE NO WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR FOR THE USE OR NON-USE OF ANY INFORMATION, RESULTS, CONCLUSIONS OR RECOMMENDATIONS CONTAINED IN ANY REPORTS PROVIDED HEREUNDER.

3.0 CLAIMS/REMEDY

In the event of a claim regarding performance of the Company's services, the Company will examine the matter to ascertain if any defects, errors or omissions have occurred. On determination by the Company of its fault, the Company, at its sole option, shall either correct or re-perform such portion of services as may be necessary, or refund that portion of the original charge attributable to the services in question. The foregoing is the sole and exclusive remedy of the Purchaser for any actual defect, error or omission in the services performed by the Company.

4.0 TIME OF PERFORMANCE

All completion dates shall be interpreted to mean "estimated" completion dates only, and shall in no way be construed as falling within the meaning of "time is of the essence". In no event shall the Company be liable for any loss or damage resulting

from delays in the performance of the work.

5.0 NATURE OF THE SERVICE

The Company's performance of the work shall be conclusively deemed to constitute the rendering of a service and shall not be construed to constitute the sale of goods, materials, or products within the meaning of the Uniform Commercial Code.

6.0 TERMS OF PAYMENT

The price for services shall be as specified in the Company's proposal or on Company rate sheet. Unless otherwise agreed, payment terms are net 30 days from the date of invoice. Invoices shall be submitted upon completion of the services and submission of any requested reports unless progress billings are utilized.

7.0 PURCHASER'S FACILITY - AVAILABILITY, RESPONSIBILITY

Availability of the subject equipment on the agreed upon start date is Purchaser's responsibility. Purchaser shall pay the Company for any on site waiting time experienced by Company personnel due to lack of availability. Purchaser shall have a representative available at all time during the performance of Company's service. Unless otherwise notified in writing, such representative is deemed to have authority to act on behalf of Purchaser.

No Company Representative is licensed to operate Purchaser's equipment, and shall not be requested to do so. Purchaser shall have complete responsibility for the operation of its equipment and shall indemnify and save Company harmless against all loss, expense and damage resulting from personal injury or property damage arising out of operation or use of such equipment.

8.0 LIMITATION OF LIABILITY

The Company's liability on all claims of any kind (excluding death or bodily injury) for all losses or damages arising out of, connected with, or resulting from this order, or from the performance or breach thereof shall in no case exceed the contract price.

In no event, whether based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise, shall the Company, its employees, subcontractors and suppliers be liable for special, incidental, indirect, exemplary or consequential damages.

This Limitation of Liability shall prevail over any conflicting or inconsistent provision contained in any item or document which comprises the contract.

9.0 DESIGNS, PATENTS AND PRODUCTS

All designs, patents and products resulting directly or indirectly from this service shall be the exclusive property of the Company.

10.0 FORCE MAJEURE

Neither party shall be liable to the other for failure to perform due to so-called Acts of God or any other cause beyond its reasonable control and without its fault or negligence.

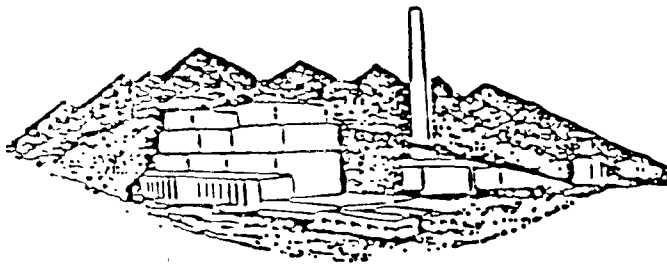
11.0 TERMINATION

The Purchaser may terminate the service at any time upon giving the Company written notice within a reasonable time. In such event, Purchaser shall pay for work performed, including expenses, overhead and profit.

12.0 GOVERNING LAW

The validity, construction and performance of this Agreement shall be governed by the law of the Commonwealth of Massachusetts.

Revised: 11/16/2000



INTERMOUNTAIN POWER SERVICE CORPORATION

CONFIRMATION: (435) 864-4414 EXT. 6577

FACSIMILE: (435) 864-6670

FACSIMILE COVER SHEET

DATE: 7-31-02

TO:

COMPANY NAME:

Babcock Borsig

ATTENTION:

Bob Faia or Craig Petersen

FACSIMILE #:

508-853-3949

FROM:

Phil Hailes

EXT:

DEPT:

Tech Services

PAGES TO FOLLOW:

1

COMMENTS:

Call me to discuss

DATE & TIME SENT:

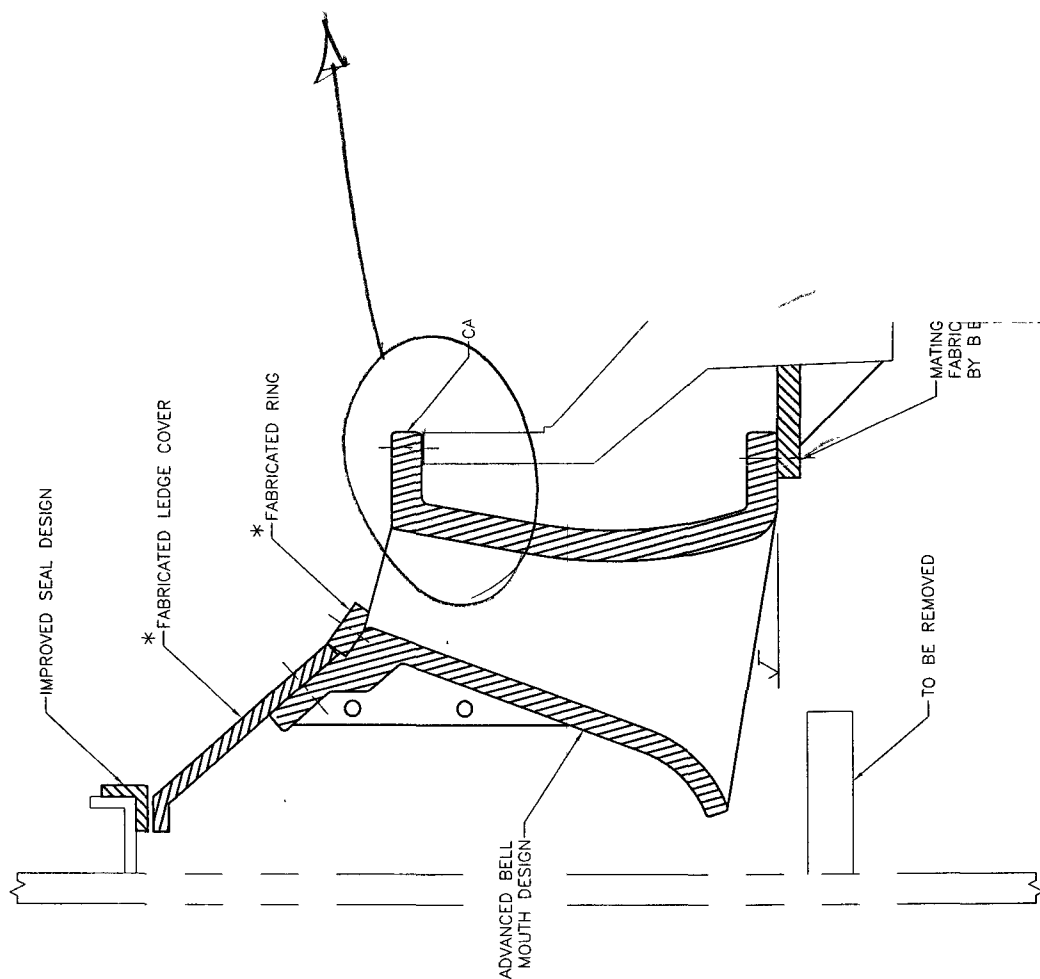
CONFIRMATION BY:

APPROVED BY:

850 WEST BRUSHWELLMAN ROAD, DELTA, UT 84624-9546

IP12_002741

7-31-02



Must not change the effective height of the ring seat.

* NOTE: THESE COMPONENTS COULD BE INTEGRATED INTO ONE PART IN THE FUTURE, AFTER PROTOTYPE TESTING AND OPERATION

This document and the information, design and material contained and/or illustrated therein, (hereinafter "proprietary material"), is the property of BARCOCK BORISG POWER, Inc., P.O. Box 1000, Worcester, MA 01090-0000, and is submitted, lent and furnished to recipient in strict confidence with the understanding that the recipient shall not reproduce, copy, loan, dispose or otherwise use the information, design and material for any purpose other than that for which it was originally intended, without the prior written consent of BARCOCK BORISG POWER, Inc. In any event, the recipient shall return this document and the information, design and material to BARCOCK BORISG POWER, Inc. upon request.

AC

From: <jsund@babcockpower.com>
To: <phil-h@ipsc.com>
Date: 11/6/2003 11:40:28 AM
Subject: Quote for Riley Variable Orifices

Phil,

Attached Word file contains our quote for 22" half blade variable orifices. Please note that we are quoting a delivery time of 6 weeks. If you choose to order, we will try to reduce this delivery time by a week or two, but as of this time, we are going with the 6 week delivery.

Thank you for your continued business.

This email and any files transmitted with it are confidential and intended solely for the use of the individual or entity to whom they are addressed. If you have received this email in error please notify the system manager. This footnote also confirms that this email message has been scanned for the presence of computer viruses.

CC: <dcoates@babcockpower.com>, <estrzelewicz@babcockpower.com>, <tmartinko@babcockpower.com>, <DSisson@babcockpower.com>

Riley Power Inc

November 6, 2003

Intermountain Power Agency
850 W Brush Wellman Road
Delta, UT 84624-9546

Attention: Mr. Phil Hailes
Engineer

FAX: 435-864-6670
phil-h@ipsc.com

Subject: Variable Orifices for Coal Line Balancing
Field Engineering & Services Quotation: **04-W-008**

Mr. Hailes:

Per your request, Riley Power Inc. (RPI) is pleased to offer 22" half blade variable orifices for the firm price of **One Thousand Fifty Dollars each (\$1,050.00)**, including installation drawing. Price does not include installation. Price does not include any applicable taxes or freight, which is prepaid and add. Delivery is **six weeks** from receipt of purchase order, and is FOB shop.

Acceptance of this order is subject to RPI Terms and Conditions – Materials Short Form, attached. Price and delivery is valid for 60 days.

Thank you for this opportunity to be of service.

Please call me at 508-854-3718 or e-mail jsund@babcockpower.com with any questions that you may have.

If you wish to place an order, please forward your purchase order to Elaine Strzelewicz, Field Engineering & Services Department, Riley Power Inc., P.O. Box 15040, Worcester, MA 01615-0040. Telephone 508-854-3862, email estrzelewicz@babcockpower.com.

Sincerely,
Riley Power Inc

John Sund
Field Engineering & Services Department

CC
T. Martinko
D. Sisson
E. Strzelewicz
D. Coates

**Riley Power Inc.
TERMS AND CONDITIONS - MATERIALS
(SHORT FORM)**

1.0 GENERAL

Riley Power Inc. hereinafter called "Company" shall perform, and the Purchaser agrees to purchase, the proposed equipment ("equipment") in accordance with the terms and conditions contained herein.

2.0 PRICE AND TERMS OF PAYMENT

The price is as specified in the Company's proposal or quotation. Unless otherwise agreed, the price shall be valid only for sixty (60) days from the date submitted and terms of payment shall be net 30 days from date of invoice. Prorated billings shall be permitted for partial shipments or work performed.

3.0 DRAWINGS

If Materials were designed by Company, any drawings furnished for Purchaser's evaluation may contain confidential information, and may not be copied or used for any other purpose. All such drawings will be returned upon Company's request. If Materials are in-kind replacements to be fabricated from Purchaser's drawings, the Purchaser shall furnish to the Company all information, instructions and details requisite for execution of the work.

4.0 TRANSPORTATION

Unless otherwise specified in the Company's quotation, all shipments shall be made F.O.B point of origin. Unless otherwise provided, the price is exclusive of freight charges, which will be to Purchaser's account. The type of transportation and the routing shall be decided by Purchaser. Unloading, hauling and handling between the points of delivery and job site shall be Purchaser's responsibility.

5.0 TIME OF SHIPMENT DELIVERY

All shipments or delivery dates either referenced by the Company or requested by the Purchaser shall be interpreted to mean "estimated" shipment or delivery dates only, and shall not be construed as falling within the meaning of "time is of the essence". In no event shall the Company be liable for any loss or damage resulting from delays in the performance of the work.

6.0 DELAYS AND FORCE MAJEURE

The Company shall not be liable for any expense, loss or damage for failure to supply materials or supervision as required because of fire, flood, Acts of God, strikes, labor shortages or disputes, riots, act of terrorism, thefts, accidents, transportation delays, acts or failure to act of Government or purchaser or any other cause whatsoever, whether similar or dissimilar to the above, beyond the reasonable control of the Company. In the event of such delay, the time of completion and contract price will be subject to adjustment.

7.0 TAXES

Unless otherwise provided, the price stated in the Company's quotation is exclusive of any applicable sales, use, ownership, excise or other similar taxes. If the Company is required by law to collect and/or pay any such tax, the Purchaser shall reimburse the Company for the full amount of such payment. Rulings of authorities in charge of the administration of such law that a tax is payable shall be final and binding upon the Purchaser.

8.0 WARRANTY/REMEDY

The Company warrants to the original purchaser its materials and workmanship against detrimental defects. The warranty duration shall be one year from first use, but in no event longer than 18 months from shipment.

THE COMPANY MAKES NO OTHER REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES INCLUDING THE WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

In the event of a detrimental defect in materials or workmanship, the Company's sole liability and Purchaser's exclusive remedy for breach of said warranty or for other claims arising under this warranty for any cause whatsoever, including negligence, irrespective of whether such defects or claims are discoverable or latent shall be, at the Company's option, to repair, on a straight time basis, or provide replacement parts. Removal and reinstallation expense and/or work and transportation costs are not part of this warranty and are to Purchaser's account. Purchaser may not backcharge the Company for warranty claims without the Company's prior written consent. Equipment repaired, rebuilt or modified by Purchaser or other third parties without Company's consent carries no warranty, either express or implied. This warranty does not cover the effects of normal wear or abuse of the equipment, abrasion, erosion or corrosion. The company does not warrant that the operation of the equipment will comply with any laws or regulations governing environmental impact.

This warranty is conditioned upon prompt notice of the particular detrimental defects within ten days of discovery, proper use and maintenance of the equipment, reasonable access to the Company to inspect the equipment and no further damage to the equipment from acts of Purchaser or third parties after discovery of the defect.

9.0 CHANGE ORDERS

Without invalidating the contract, the Purchaser may order changes in the work by altering, adding to or deducting from the work, or to add correlated work not covered by the contract, or to make provision for changed conditions of this contract. All such changes in the work shall be authorized by written change order and shall be approved by both parties. If any revision necessitates a price or time adjustment, the contract will be amended accordingly.

10.0 COMPANY REPRESENTATIVES (if included in original scope or added by Purchaser)

Any representative provided by the Company shall perform the service in an advisory or consulting capacity and on a "reasonable efforts" basis. The representative may give reasonably complete instruction, but shall not exercise supervision. No Company representative is licensed or authorized by the Company to operate equipment, and shall not be requested to do so by Purchaser.

11.0 TITLE AND RISK OF LOSS

Title to the equipment delivered or placed into storage will pass to Purchaser upon receipt of payments, except that the Company shall retain a security interest in any equipment not paid for in full. The risk of loss or damage to the equipment shall pass to Purchaser at the f.o.b. point.

12.0 PATENTS

To the extent that any goods furnished hereunder are made to Purchaser's specifications, Purchaser shall at its expense defend any suit brought against the Company based on a claim that such goods infringe any United States patent claims, provided that Purchaser is given prompt notice of such claim and full cooperation of the Company to defend and compromise such claim. In any such suit, Purchaser shall pay all costs and damage awarded against the Company.

13.0 SERVICE AND OPERATING INSTRUCTIONS

Service guides and operating instructions, if required to be furnished, are to assist licensed operators in the use of the equipment furnished by the Company. They are not intended to cover every possible contingency or variation in the equipment, but rather to complement the judgement of the licensed operator whose duty it is to make the final decision in a particular circumstance.

14.0 LIMITATION OF LIABILITY

The Company's liability on all claims of any kind (excluding death or bodily injury), whether based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise, for all losses or damages arising out of, connected with, or resulting from this order, or from the performance or breach thereof, or from any equipment or services covered by or furnished under this order or any extension or expansion thereof (including remedial warranty efforts), shall in no case exceed the contract price. Except as to title all such liability shall terminate upon the expiration of the warranty period. In no event, whether based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise, shall the Company, its employees, subcontractors and suppliers be liable for special, incidental, indirect, exemplary or consequential damages under any cause or form of action whatsoever. This Limitation of Liability shall prevail over any conflicting or inconsistent provision contained in any item or document which comprises the contract. The remedies provided herein are exclusive.

15.0 GOVERNING LAW

The validity, construction and performance of this agreement shall be governed by the law of the Commonwealth of Massachusetts.

16.0 ARBITRATION

All disputes arising in connection with the Agreement shall be finally settled by arbitration. The arbitration shall be held at Worcester, Massachusetts, and conducted in accordance with the rules of the American Arbitration Association. Judgment upon the award rendered may be entered in any court having jurisdiction or application may be made to such court for judicial acceptance of the award and an order of enforcement, as the case may be.

17.0 CANCELLATION

The Company may terminate this agreement by written notice to the Purchaser if a petition is filed by or against the Purchaser under the bankruptcy laws, or if the Purchaser makes a general

assignment for the benefit of its creditors, or if a receiver is appointed for any property of the Purchaser, or for Purchaser's willful failure without cause to make payment on any application for payment within thirty (30) days from submission thereof. Such termination shall be without prejudice to any of the legal rights and remedies the Company may possess to recover any amounts due under the contract. In the event the Purchaser wishes to cancel for convenience, Purchaser shall pay the Company the following charges, which sum shall be greater of either: (a) the expense incurred by the Company to date of cancellation, including costs incidental to Purchaser's cancellation, plus overhead and profit; or (b) fifteen percent (15%) of the total contract price.

18.0 ENTIRE AGREEMENT

There are no understandings between the parties hereto as to the subject matter of this agreement other than as set forth herein. Any provisions of a purchase order or specification which may be issued hereafter shall not be binding on the parties unless duly approved in writing by an authorized representative of each party.

Revised: 02/10/2003

=== COVER PAGE ===

TO: Phil Hiles

FAX: 14358646670

FROM: TECHINOMICS INC FLA

FAX: 18003698061

TEL: 18003698381

COMMENT:



Technomics, Inc.
Engineered Components & Services
800-369-8381
Fax 800-369-8061

☒ 1837 S.E. Federal Highway • Suite 732
Stuart, FL 34994

IF YOU ENCOUNTER DIFFICULTY WITH
THIS TRANSMISSION CALL (561) 223-5105

☐ 1151 Freeport Rd. #210
Fox Chapel, PA 15238

IF YOU ENCOUNTER DIFFICULTY WITH
THIS TRANSMISSION CALL (412) 826-8388

FAX TRANSMITTAL FORM

Of Pages This Transmission (Including This Form) 2

Date 6-1-00

Message # _____

Time _____ A P

TO:

Technomics Power
ATTN: Phil Niles

FAX # (435) 864-6670

CONTACT NAME _____

Extension _____

IP12_002750

03 17:00 WED 10:16 FAX 1435 864 0670

002

Techonomics Rotating Throats Guaranteed Parameters

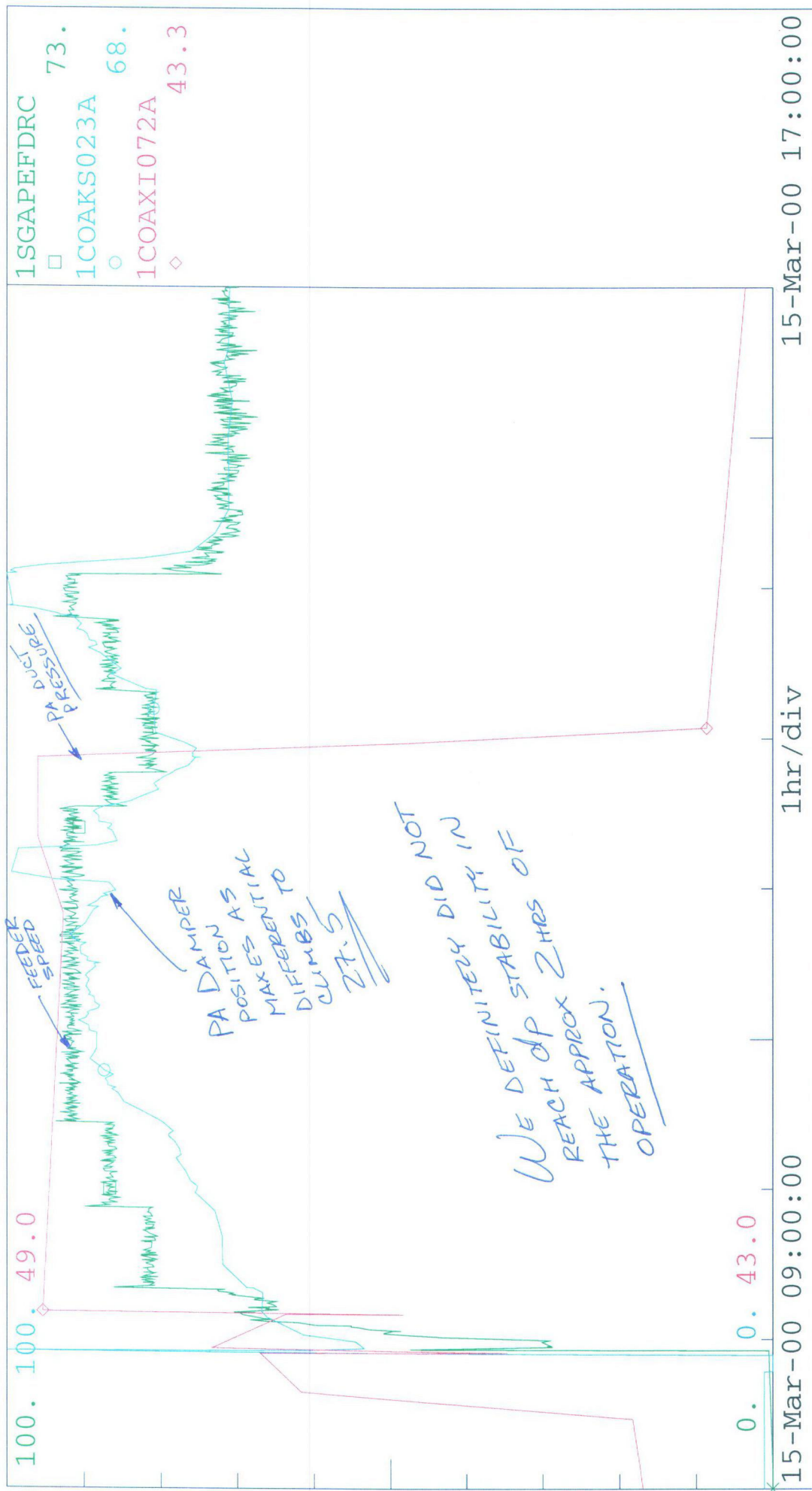
The following performance and maintenance parameters are the minimum guaranteed parameters defining acceptance or rejection of the Techonomics throats to be installed at the Intermountain Generating Station. The determination of acceptance or rejection will be made by Intermountain Power Service Corporation based on the testing and historical baseline data that IPSC determines to be most reliable and consistent. Any performance improvements specified in the following list shall be calculated as the difference between the existing B&W rotating throat performance and the Techonomics rotating throat performance.

1. Minimum guaranteed fineness..... 75%
(% passing 200 mesh corrected for moisture and HGI)
2. Maximum guaranteed drive system amperage at 95% feeder speed..... 62 amps
(under normal operating conditions) 70
3. Mill shall provide stable operation at full rated capacity (65 tph) regardless of rock content in fuel. Stable is defined as a maximum dp of 21", no coal bias, no air bias, no duct pressure bias.
4. Mill shall experience no measurable erosion in mill areas above the roll wheels.
5. Techonomics rotating throat life shall wear at one-half or less of the rate of the B&W rotating throats
6. Mill shall not exceed 2" higher differential than the lowest running B&W rotating throat at any mill capacity.
7. Mill rejects shall consist of at least ~~70~~ 90 % noncombustibles. 90
(Visual inspection is not adequate to accurately determine actual pyrite content. Pyrite samples shall be washed and lab inspected.)
8. NOx emissions shall not increase as a result of Techonomic throat installation.
9. Any throat components breaking or cracking under typical operating circumstances shall be replaced by Techonomics at no cost to IPSC for materials.
10. Mill will be operated at a maximum fuel to air ratio of 2:1 throughout the testing period.
11. Techonomics rotating throats shall not impede the removal of the gearbox and drive assembly beyond what is typically required with stationary throats.
12. Tests shall be run with a hydraulic loading skid discharge pressure of 2100 psi.

IP12_002751

Printed out for: JAMES-N - 19-May-00 08:25:10
 100 Messages U1 Pulv Unit 1 Pulv data

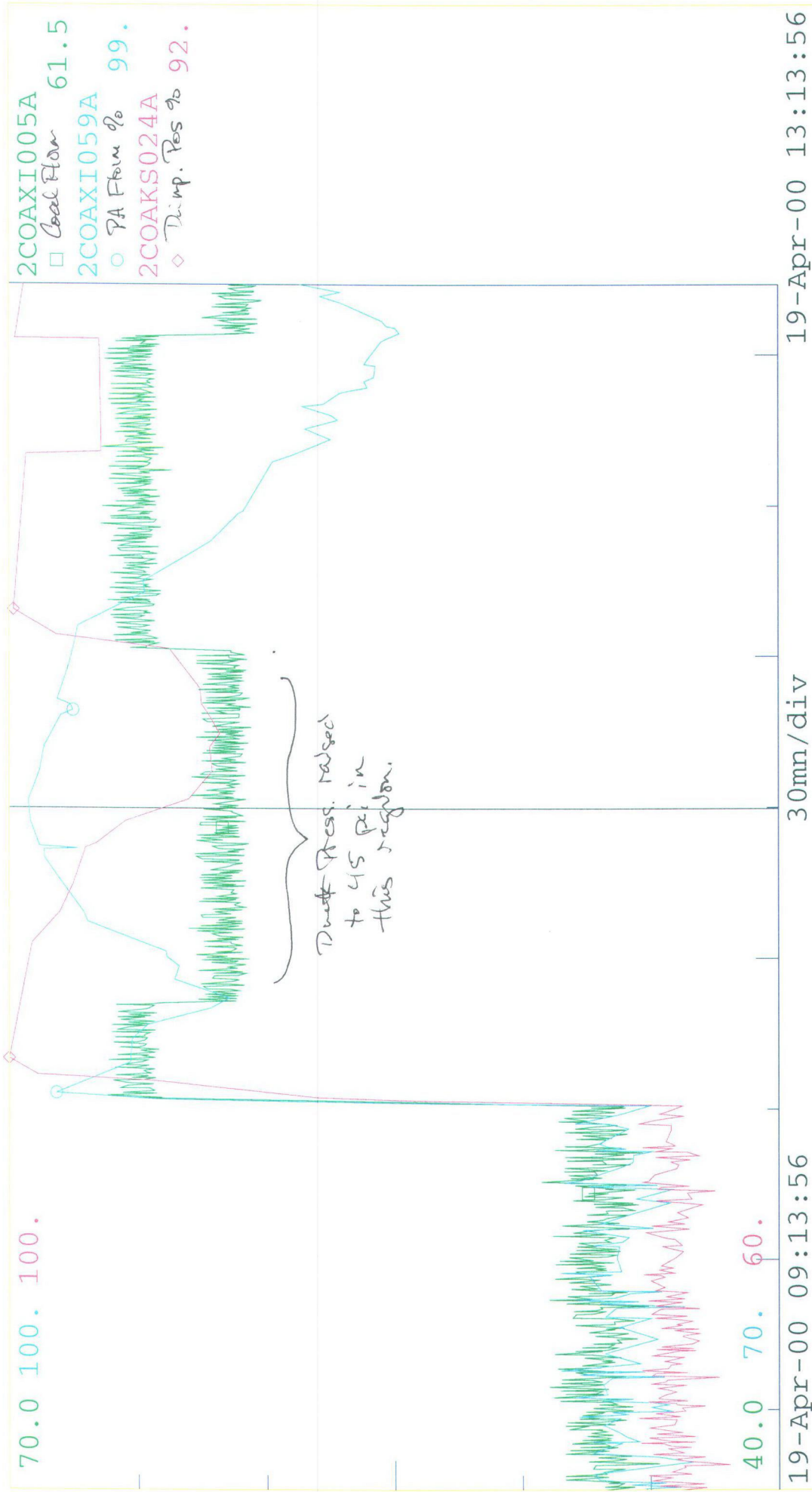
19-May-00 08:25:10



EndTim= 15-Mar-00 17:00:00 / EvalTim= 19-May-00 08:25:10 / PanRate= 0

Printed out for: GARRY-C - 20-Apr-00 08:41:11
100 Messages U2 Pulv Unit 2 Pulv data

20-Apr-00 08:41:11



EndTim= 19-Apr-00 13:13:56 / EvalTim= 19-Apr-00 11:29:46 / PanRate= 0

4-19-10

	Test 1	Test 2	Test 3
Unit 2 Pulv	D	D	D
% Feeder Speed	96.0	93.9	95.4
Actual Pulv Coal Flow (tph)	65.3	63.9	64.9
PA Damper Position (%)	91.1	86.8	99.4
PA Flow (%)	98.1	98.8	93.3
PA Inlet Damper Temp (DEGF)	376.0	379.4	332.0
Pulv PA air temp comp (Deg F)	379.5	377.2	335.9
PA D/P (INWC)	22.3	20.2	24.9
Disch Temp (DEGF)	151.2	149.2	150.1
Pulv Motor (amps)	64.3	64.3	66.2
Pulv C amp swing	8.6	8.0	8.4
Hydraulic Skid Press FeedBack	2378	2147	2214
Hydraulic Skid Press Set Pt	2400	2400	2395
Skid Mode	auto/master	auto/master	
Local Read	2400		
PULV 1D, 30K OVRHAUL HOURS	106	890	1803
Pulv Air to Fuel Ratio	1.79	1.82	1.71
Pulv Pitot Tube DP (INWC)	4.00	4.01	3.43
PA Mass Flowrate (lb/min)	3892	3881	3691
Coal Pipe Velocity (ft/min)	4352		
Pulv Temp air flow	1386	1354	1690
Pulv Air Bias	0.0	0.0	0.0
Pulv Coal Bias	0.0	0.0	0.0
Barometric Pressure (inhg)	25.59	25.23	25.49
Pri Air Duct Pressure (inwc)	45.19	44.71	45.22

Data Pts		Start time	End Time
2SGAPEFDRD	Test 1	12/14/1999 13:15	12/14/1999 14:15
2COAXI005A	Test 2	01/26/2000 12:30	01/26/2000 13:30
2COAKS024A	Test 3	04/19/2000 12:05	04/19/2000 12:35
2COAXI059A			
2SGATE0642			
2COAXI203A			
2SGAPT0153			
2COAXI067A			
2SGAKK0004			
2SGAPE1004			
2SGAPT0282			
2COAXI234A			

2SGATZ008C

2sgbpe059r
2Coaxi241D
2SGBpe0059
2SGBPE059V
2SGBPX4068
2COAXI214A
2COAXI224A

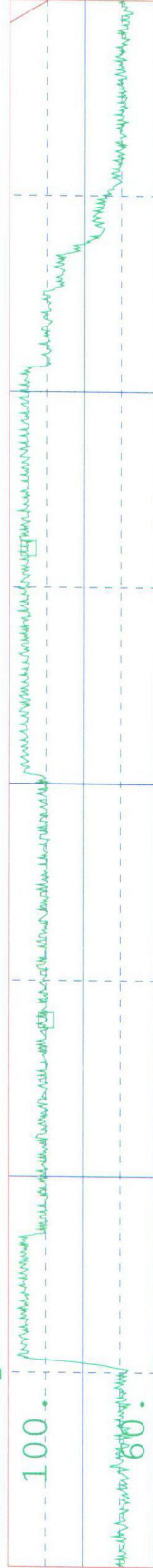
2INAPT0227

2COAXI072A

Printed out for: CECIL-J - 20-Apr-00 10:09:54
0 Messages PH-test unit 2 D pulv

20-Apr-00 10:09:54

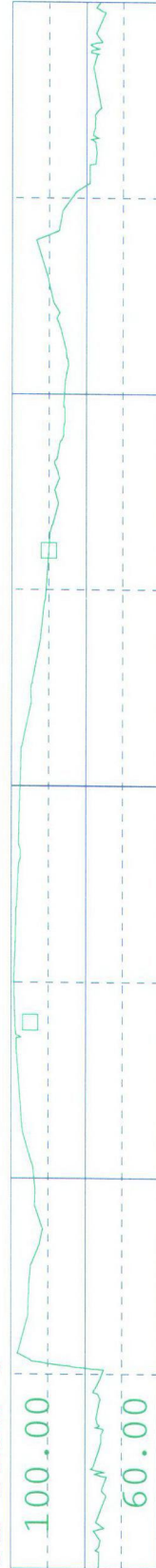
Feeder Speed



2SGAPEFDRD

□ 69.
%

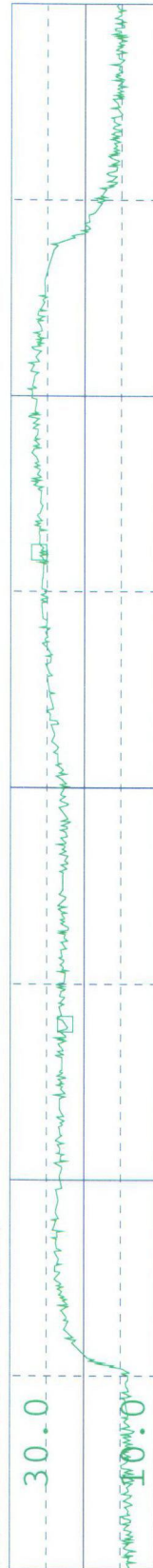
PA Flow %



2COAXI059A

□ 76.23
%

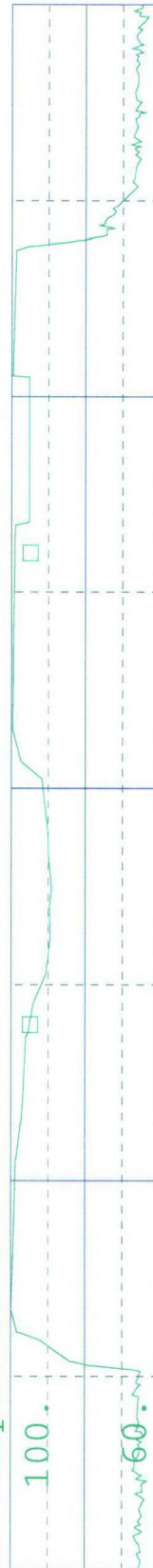
Diff Pres InH2O



2SGAPT0153

□ 15.3
INWC

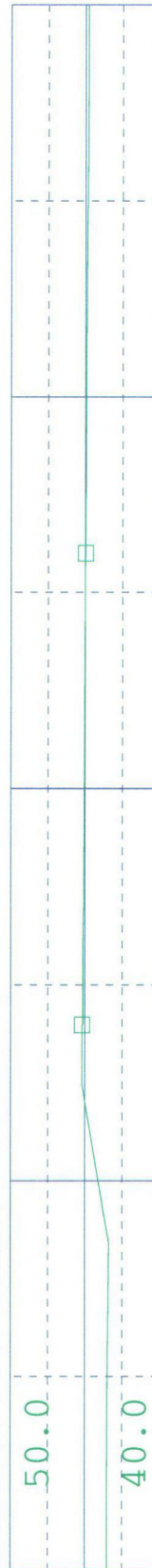
PA Damper Ps %



2COAKS024A

□ 65.
%

Duct Press InH2O



2COAXI072A

□ 44.8
INWC

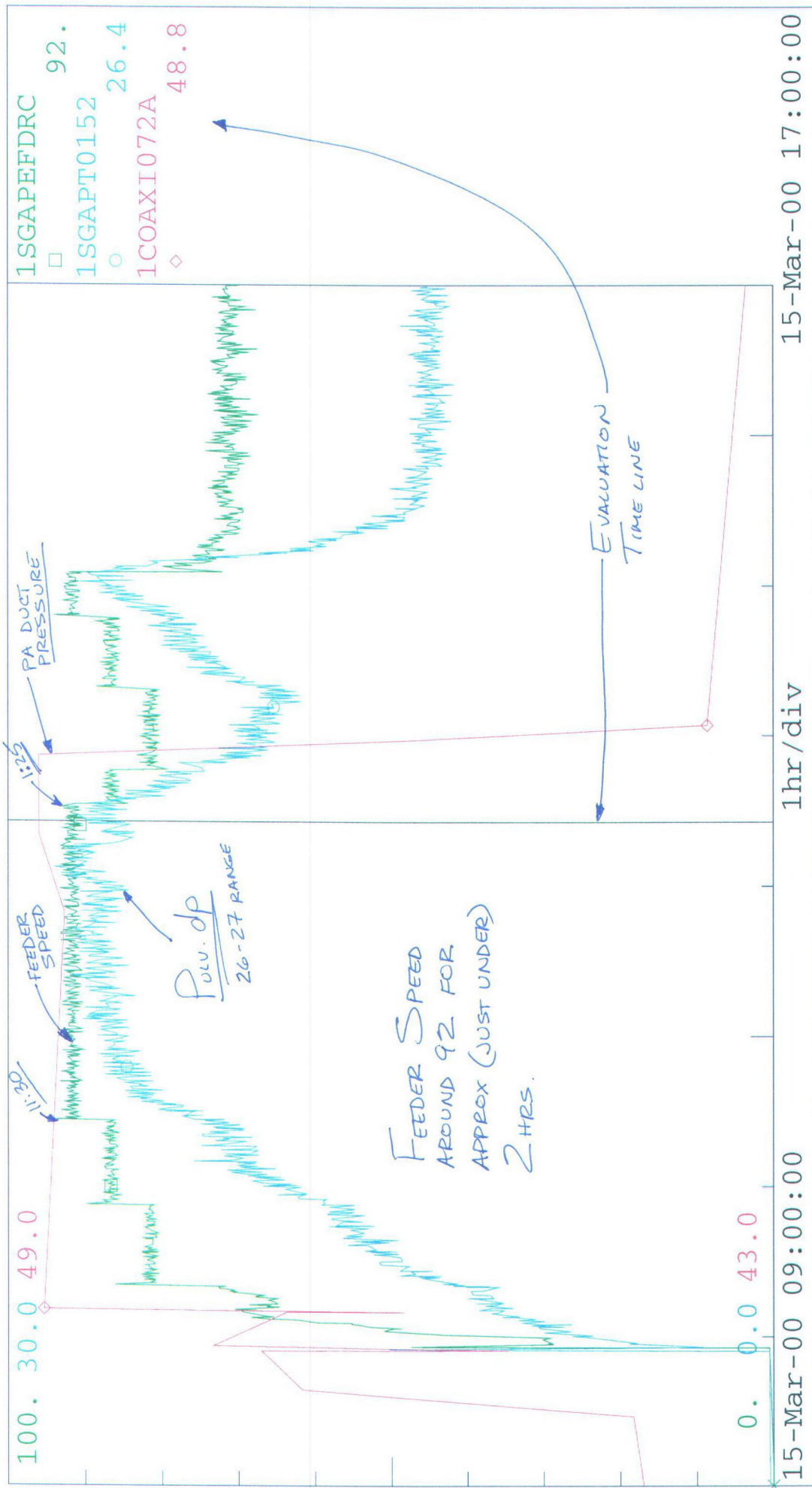
19-Apr-00 10:00:00

19-Apr-00 14:00:00

30mm/div

19-Apr-00 14:00:00

Not a convincing display of stability. Dp continues to rise until damper max out. Dp not acceptable at 26-27
 Printed out for: JAMES-N - 19-May-00 08:07:52
 100 Messages U1 Pulv Unit 1 Pulv data 19-May-00 08:07:52



EndTim= 15-Mar-00 17:00:00 / EvalTim= 15-Mar-00 13:25:30 / PanRate= 0

(Fax) 800-369-8061

Intermountain Generating Station
Pulverizer Fineness Results

		skid auto	skid auto	skid auto	skid auto
Test#					
Date Tested		05/26/2000	05/25/2000	05/26/2000	05/25/2000
Unit	1	2	1	2	1
Mill	A	B	C	D	E
% Feeder Speed		70.00	70.00	70.00	70.00
Actual % Through 200 Mesh		73.99	76.61	77.21	75.45
Expected % Through 200 Mesh		64.51	62.63	64.51	62.63
HGI		44.5	43.5	45	44
Total Moisture		6.25	6.69	6.25	6.69
Air Dry Loss		4.56	4.85	4.56	4.85
As Received Btu		12,290	12,150	12,290	12,150

Test Period Average Data

Test		2	3		
Unit Pulv	2/A	2/B	1/C	2/D	1/E
% Feeder Speed		70.96	69.40	70.29	69.70
Actual Pulv Coal Flow (tph)		47.02	47.18	47.75	47.39
PA Damper Position (%)		65.68	67.22	66.68	78.96
PA Flow (%)		87.40	78.08	78.85	86.88
PA Inlet Damper Temp (DEGF)		295.04	357.37	324.28	304.15
PA D/P (INWC)		9.43	15.15	14.00	16.95
Disch Temp (DEGF)		152.31	151.89	150.55	151.46
Pulv Motor (amps)		58.57	60.10	56.89	61.50
Pulv Pitot Tube DP (INWC)		3454	3114	3115	3326
PA Mass Flowrate (lb/min)		3413	2957	3073	3267
Pulv hrs since 30K Overhaul		313	3671	2548	14961
Pulv H amp swing		12.56	6.56	7.59	8.02
PA Duct Pressure (INWC)		43.43	43.11	43.47	43.52
Hydraulic Skid Press FeedBack		1918	2280	1977	2082
Hydraulic Skid Press Set Pt		2173	2135	2156	2125

did not
get reset

Test		2400 psi	Locked		
Mill	A	B	C	D	E
* Contract % Through 200 Mesh	70	70	70	70	70
HGI Correction		0.890	0.870	0.890	0.870
Moisture Correction		0.994	0.992	0.994	0.992
Fineness Correction		1.085	1.113	1.085	1.113
Expected % Through 200 Mesh (Good @ 65 tph only)		64.51	62.63	64.51	62.63
Actual % Through 200 Mesh		73.99	76.61	77.21	75.45
Difference		9.48	13.98	12.70	12.82
Ratio		114.70	122.32	119.69	120.47
% Retained on 30 & 50 Mesh		0.06	0.05	0.02	0.07
Actual % Through 50 Mesh		99.57	99.56	99.58	99.59
Actual % Through 100 Mesh		96.37	98.18	98.34	97.10

*Contract coal - 48 HGI and air dry loss < 4%.

Expected is found from fineness correction vs % through 200 mesh graph.

	A PULV	B PULV	C PULV	D PULV	E PULV
Fineness Correction		1.084726	1.112908	1.084726	1.112908
Expected	#VALUE!	64.51	62.63	64.51	62.63

Note: 1C + 2D @ lower PA Flow

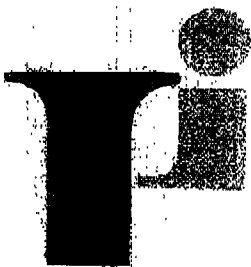
IP12_002758

Intermountain Generating Station
Pulverizer Fineness Results

					skid auto
Test#					05/25/2000
Date Tested					1
Unit	1	2	1	2	1
Mill	A	B	C	D	E
% Feeder Speed					95.00
Actual % Through 200 Mesh					70.60
Expected % Through 200 Mesh					62.63
HGI					44
Total Moisture					6.69
Air Dry Loss					4.85
As Received Btu					12,150
Test Period Average Data					
Test					
Unit Pulv	2/A	2/B	3 1/C	2/D	1/E
% Feeder Speed					94.51
Actual Pulv Coal Flow (tph)					64.28
PA Damper Position (%)					99.45
PA Flow (%)					91.86
PA Inlet Damper Temp (DEGF)					355.73
PA D/P (INWC)					25.48
Disch Temp (DEGF)					151.25
Pulv Motor (amps)					66.91
Pulv Pitot Tube DP (INWC)					3519.48
PA Mass Flowrate (lb/min)					3469.61
Pulv hrs since 30K Overhaul					14962.45
Pulv H amp swing					7.99
PA Duct Pressure (INWC)					45.31
Hydraulic Skid Press FeedBack					2235
Hydraulic Skid Press Set Pt					2400
Test					
Mill	A	B	C	D	E
* Contract % Through 200 Mesh					95
HGI Correction					0.870
Moisture Correction					0.992
Fineness Correction					1.113
Expected % Through 200 Mesh (Good @ 65 tph only)					62.63
Actual % Through 200 Mesh					70.60
Difference					7.97
Ratio					112.72
% Retained on 30 & 50 Mesh					0.04
Actual % Through 50 Mesh					99.50
Actual % Through 100 Mesh					96.32
*Contract coal - 48 HGI and air dry loss < 4%.					
Expected is found from fineness correction vs % through 200 mesh graph.					
	A PULV	B PULV	C PULV	D PULV	E PULV
Fineness Correction	0.000000	0.000000	0.000000	0.000000	1.112908
Expected	164.88	164.88	164.88	164.88	62.63

IP12_002759

	Test 1	Test 2	Test 3
Unit 2 Pulv	D	D	D
% Feeder Speed	96.0	93.9	No good data for this point for this time:
Actual Pulv Coal Flow (tph)	65.3	63.9	No good data for this point for this time:
PA Damper Position (%)	91.1	86.8	No good data for this point for this time:
PA Flow (%)	98.1	98.8	No good data for this point for this time:
PA Inlet Damper Temp (DEGF)	376.0	379.4	No good data for this point for this time:
Pulv PA air temp comp (Deg F)	379.5	377.2	No good data for this point for this time:
PA D/P (INWC)	22.3	20.2	No good data for this point for this time:
Disch Temp (DEGF)	151.2	149.2	No good data for this point for this time:
Pulv Motor (amps)	64.3	64.3	No good data for this point for this time:
Pulv C amp swing	8.6	8.0	No good data for this point for this time:
Hydraulic Skid Press FeedBack	2378	2147	
Hydraulic Skid Press Set Pt	2400	2400	
Skid Mode	auto/master	auto/master	
Local Read	2400		
PULV 1D, 30K OVRHAUL HOURS	106	890	No good data for this point for this time:
Pulv Air to Fuel Ratio	1.79	1.82	No good data for this point for this time:
Pulv Pitot Tube DP (INWC)	4.00	4.01	No good data for this point for this time:
PA Mass Flowrate (lb/min)	3892	3881	No good data for this point for this time:
Coal Pipe Velocity (ft/min)	4352		
Pulv Temp air flow	1386	1354	No good data for this point for this time:
Pulv Air Bias	0.0	0.0	No good data for this point for this time:
Pulv Coal Bias	0.0	0.0	No good data for this point for this time:
Barometric Pressure (inhg)	25.59	25.23	No good data for this point for this time:
Pri Air Duct Pressure (inwc)	45.19	44.71	No good data for this point for this time:



Technomics, Inc.

Engineered Components & Services

800-369-8381

Fax 800-369-8061 <

☒ 1837 S.E. Federal Highway • Suite 732
Stuart, FL 34994

IF YOU ENCOUNTER DIFFICULTY WITH
THIS TRANSMISSION CALL (561) 223-5105

☐ 1151 Freeport Rd. #210
Fox Chapel, PA 15238

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THIS TRANSMISSION CALL (412) 826-8388

FAX TRANSMITTAL FORM

Of Pages This Transmission (Including This Form) 2Date 5-25-00

Message # _____

Time _____ A P

TO: Technomics, Inc. Stuart, FL
Attn: Bill Baker

FAX # (435) 864 6670

CONTACT NAME _____

Extension _____

IP12_002761

To: Intermountain
 Date: 5/24/00 11:47:04 AM Pacific Daylight Time
 From: jdlester@brownelec.com (John D Lester)
 To: hobbypro@aol.com

Re:

In order to confirm the calculations for the Intermountain throat change I need a little information. It would be very good to have a clean air curve with a twist) I would need to see one on a Techninomics Throat and one on a mill they like the performance of. The same curves under load would also be helpful. (need percent feeder on the curve also) As soon as I get this information I can analyze the numbers and predict the performance of the revised throat.

Thanks.

John

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<META content="MSHTML 4.72.3612.1706" name="GENERATOR">

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<DIV>Bob </DIV>

<DIV> </DIV>

In order to confirm the calculations for the Intermountain throat change I need a little information. It would be very good to have a clean air curve with a twist) I would need to see one on a Techninomics Throat and one on a mill they like the performance of. The same curves under load would also be helpful. (need percent feeder on the curve also) As soon as I get this information I can analyze the numbers and predict the performance of the revised

throat </DIV>

<DIV> </DIV>

<DIV>Thanks</DIV>

<DIV> </DIV>

<DIV>John</DIV>

Headers

Return-Path: <jdlester@brownelec.com>

Received: from rly-za03.mx.aol.com (rly-za03.mail.aol.com [172.31.36.99]) by air-za04.mail.aol.com (v73.13) with ESMTP;

Wed, 24 May 2000 14:47:04 -0400

Received: from Namesrv.Mountain.Net (namesrv.mountain.net [198.77.1.1]) by rly-za03.mx.aol.com (v71.10) with ESMTP;

Wed, 24 May 2000 14:46:36 -0400

Received: from john (AM3-17 Charleston-WV.Mountain.Net [198.77.28.116])

by Namesrv.Mountain.Net (8.9.3/8.9.0) with SMTP id OAA10969

for <hobbypro@aol.com>; Wed, 24 May 2000 14:46:34 -0400 (EDT)

Message-ID: <000e01bf65b0677f4e1608741e4dc6@john>

From: "John D Lester" <jdlester@brownelec.com>

To: <hobbypro@aol.com>

Subject: Intermountain

Technomics throat.

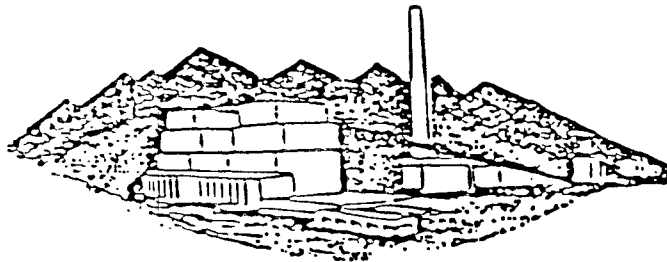
Finchers?

Start time	12/14/99 13:15	1/26/00 12:30	4/19/00 12:05	5/10/00 10:30	1/21/02 13:30	1/21/02 14:00	1/21/02 14:35
End time	12/14/99 14:15	1/26/00 13:30	4/19/00 12:35	5/10/00 11:00	1/21/02 13:55	1/21/02 14:30	1/21/02 15:05
	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7
Unit 2 Pulv	D	D	D	D	D	D	D
% Feeder Speed	96.0	93.9	95.4	85.2	81.0	85.7	90.7
Actual Pulv Coal Flow (tph)	65.3	63.9	64.9	57.9	55.1	58.3	61.7
PA Damper Position (%)	91.1	86.8	99.4	85.1	80.5	85.7	94.3
PA Flow (%)	98.1	98.8	93.3	96.9	94.7	96.8	96.5
PA Inlet Damper Temp (DEGF)	376.0	379.4	332.0	311.0	356.7	360.5	360.5
Pulv PA air temp comp (Deg F)	379.5	377.2	335.9	309.8	360.1	359.4	364.8
PA D/P (INWC)	22.3	20.2	24.9	22.3	16.9	19.0	22.0
Disch Temp (DEGF)	151.2	149.2	150.1	150.3	150.6	150.2	150.4
Pulv Motor (amps)	64.3	64.3	66.2	62.7	59.0	59.9	62.4
Pulv D amp swing	8.6	8.0	8.4	8.7	6.2	6.0	5.7
Hydraulic Skid Press FeedBack	2378	2147	2214	2114	2045	2034	2031
Hydraulic Skid Press Set Pt	2400	2400	2395	2393	2394	2396	2399
Skid Mode	auto/master	auto/master			auto/master	auto/master	auto/master
Local Read	2400				2075		
PULV 1D, 30K OVRHAUL HOURS	106	890	1803	2204	3032	3032	3033
Pulv Air to Fuel Ratio	1.79	1.82	1.71	1.97	2.04	1.97	1.85
Pulv Pitot Tube DP (INWC)	4.00	4.01	3.43	3.59	3.65	3.81	3.81
PA Mass Flowrate (lb/min)	3892	3881	3691	3810	3743	3824	3810
Coal Pipe Velocity (ft/min)	4352	4383	4133	4340	4217	4309	4298
Pulv Temp air flow	1386	1354	1690	2006	1528	1558	1564
Pulv Air Bias	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pulv Coal Bias	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Barometric Pressure (inhg)	25.6	25.2	25.5	25.0	25.3	25.3	25.3
Pri Air Duct Pressure (inwc)	45.19	44.71	45.10	46.48	43.25	43.28	43.39

Barry

Feb 6, 8:40 AM.
 Bittout 77
 85 Rot Throat
 90
 73
 84
 84 - Rot Throat
 82% feeder speed
 @ 46.6 Duct Press.

IP12_002763



INTERMOUNTAIN POWER SERVICE CORPORATION

CONFIRMATION: (435) 864-4414 EXT. 6577

FACSIMILE: (435) 864-6670

FACSIMILE COVER SHEET

DATE: April, 2002

TO: COMPANY NAME: _____

ATTENTION: Bruce Alfce

FACSIMILE #: 800-369-8061

FROM: Phil Hailes EXT: 6438

DEPT: _____

PAGES TO FOLLOW: 3

COMMENTS: The Oversize Throat Test

DATE & TIME SENT: 4/9/02 11:57

CONFIRMATION BY: _____

APPROVED BY: _____

850 WEST BRUSHWELLMAN ROAD, DELTA, UT 84624-9546

IP12_002764

85% Fdr Spd.

1C Pulverizer Oversize Throat Test.

4 hr Summary

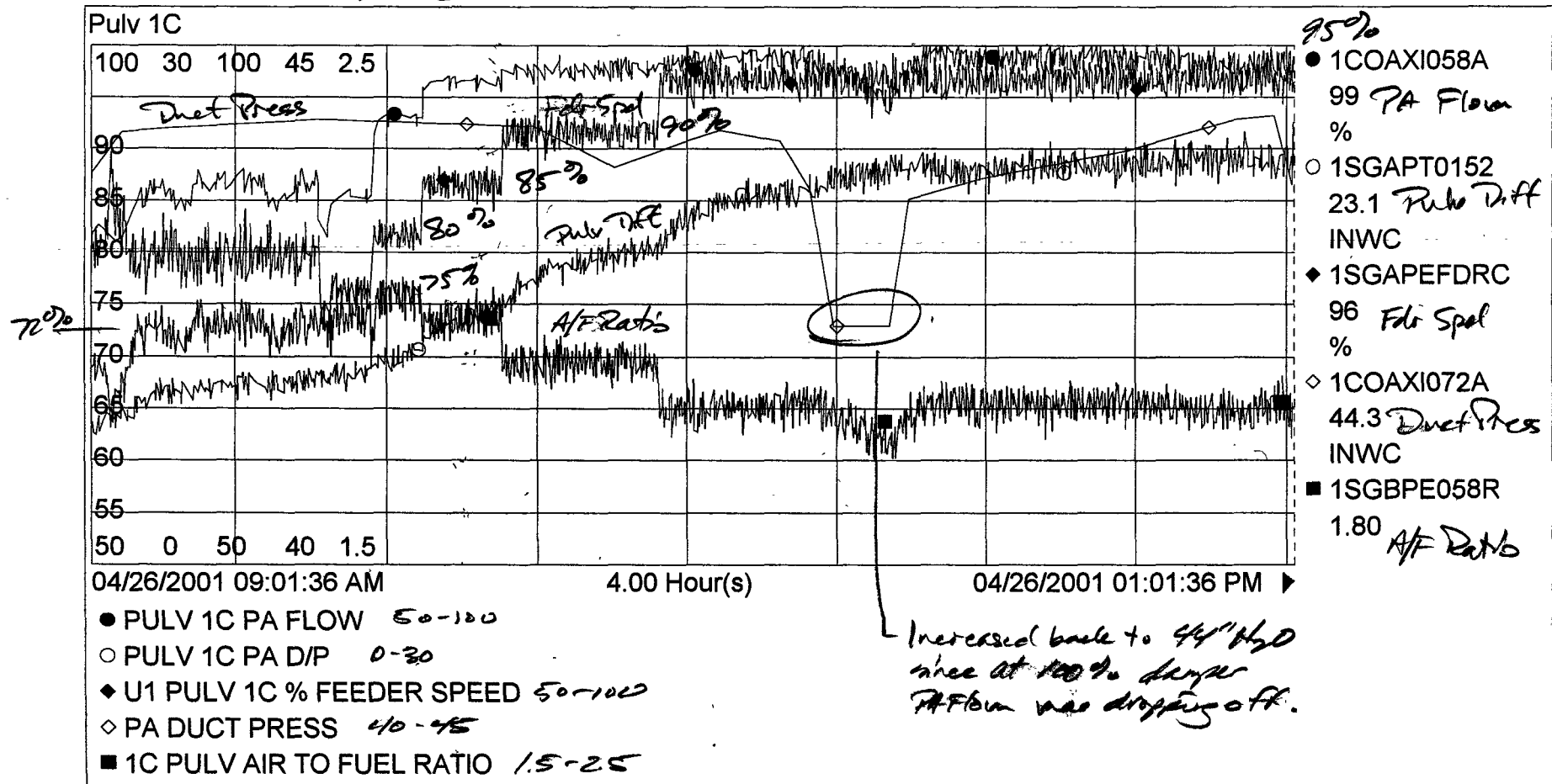
Fdr Spd. 75% to 95%

A/F Ratio 1.8

Take DP stable at 23" H₂O

Duct Press @ 44" H₂O

? 72 Amps @ 95% Apperance?



7 mills on line.

Unit 1 C Pulverizer Test Results - Technomics Rotating Throat - redesign installed U1 Major Spring 2001 Outage

On April 26, 2001 C Pulverizer was tested for capacity and fineness. Testing was under the direction of Phil Hailes with controls help from Bill Morgan and Ken Nielson (all from IPSC). Technomics observers were John Lester and Robert Provost. Feed rate was increased from 75% up to 95% in 5% increments. Time was allowed between changes for the pulverizer to stabilize. Duct pressure was set at 44" until 95% feed rate was reached. It was then lowered to 42". The PA damper went to 100% (no control) at this point and the mill began to chock off. The duct pressure was then increased to 44" for the fineness test and capacity demonstration.

The fineness test was performed by Garry Christensen and Aaron Nissen from IPSC's performance group. Coal samples were taken by traversing two perpendicular axis of each coal pipe. Per the ASME test code, each coal pipe sample was weighed and found to be within the 90 to 110 percent recovery indicating a good sample. A raw coal sample was taken during the fineness test at the feeder coal inlet gate. This was taken to IPSC coal lab for analysis as well as the sample from the coal pipes. The times for the fineness test and data reported on the fineness results were 12:50 to 14:15 on April 26, 2001. The results of the fineness showed 73% through 200 mesh (guarantee 75%) with the pulverizer averaged 71.5 amps (guarantee 62 amps) during the test. The full results are found on the following test results page. The pulverizer was run at the 95% for over 3½ hours with a pyrite sample also taken to identify the amount of coal to rock. This sample was given to Technomics to perform a detailed pyrites analysis.

Note: This pulverizer (U1 C) is being ran by operations with a 6 to 10% primary air bias plus an occasional feeder bias due to problems with pyrites loading up with large amounts of rock. The pyrites removal system needs to be modified to allow handling of the increased pyrites of this rotating throat design.

**Intermountain Generating Station
Pulverizer Fineness Results**

Test#	1	2	3	4	5	6
Date Tested	12/2/99	4/26/01				
Unit	1	1	1	1	1	1
Mill	C	C	C	C	C	C
% Feeder Speed	80	95	95			
Actual % Through 200 Mesh	75.10	73.10				
Expected % Through 200 Mesh	60.02	64.33	#VALUE!			
HGI	41.8	46.1				
Total Moisture	5.60	9.99				
Air Dry Loss	4.30	8.16				
As Received Btu	12,636	11,537				

Test Period Average Data

Test	1	2	3	4	5	6
Unit Pulv	1/C	1/C	1/C	1/C	1/C	1/C
% Feeder Speed	79.79	96.70				
Actual Pulv Coal Flow (tph)	54.28	65.77				
Pulv Air to Fuel Ratio	2.03	1.78				
Hydraulic Skid Press FeedBack (psi)	2202	2419				
Hydraulic Skid Press Set Pt (psi)	2390	2398				
Skid Mode		auto/master				
Local Skid Press (psi)		2400				
PA Damper Position (%)	81.89	98.69				
PA Flow (%)	92.86	97.21				
PA Inlet Damper Temp (DEGF)	343.83	365.32				
PA D/P (INWC)	21.95	23.69				
Disch Temp (DEGF)	150.10	150.77				
Pulv Motor (amps)	64.63	71.54				
Pulv Pitot Tube DP (INWC)	3.26	3.56				
PA Mass Flowrate (lb/min)	3664	3904				
Pulv hrs since 30K Overhaul	396	8875				
Pulv amp swing	7.09	6.47				
PA Duct Pressure (INWC)	43.81	44.14				

Test	1	2	3	4	5	6
Mill	C	C	C	C	C	C
* Contract % Through 200 Mesh @ 95% fdr speed	70	70	70	70	70	70
HGI Correction	0.836	0.921	#VALUE!			
Moisture Correction	0.997	0.958	#VALUE!			
Fineness Correction	1.152	1.087	#VALUE!			
Expected % Through 200 Mesh (Good @ 65 tph only)	60.02	64.33	#VALUE!			
Actual % Through 200 Mesh	75.10	73.10				
Difference	15.08	8.77	#VALUE!			
Ratio	125.13	113.63	#VALUE!			
% Retained on 30 & 50 Mesh	0.10	0.03				
Actual % Through 50 Mesh	99.90	99.70				
Actual % Through 100 Mesh	97.60	96.90				

*Contract coal - 48 HGI and air dry loss < 4%.

Expected is found from fineness correction vs % through 200 mesh graph.

	Test 1	Test 2	Test 3	D PULV	E PULV	F PULV
Fineness Correction	1.151781	1.087353	#VALUE!			
Expected	60.02	64.33	#VALUE!			

IP12_002767

From: Phil Hailes
To: gking@bbpwr.com; James Nelson
Date: 11/7/02 9:28AM
Subject: Re: Testing Next Week, Wednesday, Nov 13.

In addition to what has already been written and spoken, I must also comment on the proposed test procedure that BBP has submitted.

Item 2.0 of the submitted test procedure by BBP, could be construed to say that acceptability is achieved by exceeding the performance of the existing worn throats. As has been stated, this is not the case.

I must reiterate that the acceptability of the new throats will be based principally upon meeting the following criteria.

- 1) 95% feeder speed mill throughput
- 2) Coal fineness (73%, 200 mesh)
- 3) Differential Press less than 21"
- 4) Drive motor amps below 70 amps.

The new BBP throats are being installed in a mill that needs new throats, because the existing throats are worn.

>>> James Nelson 11/07/02 09:01AM >>>
George, Phil,

I sincerely question the value of testing an existing worn out mill, but if Borsig is intent on proceeding with current baseline operation with the worn out mill is it imperative that we be clear that determination of adequate performance of the new Borsig throats is not based on incremental improvement compared to the existing operating, worn out mill. It is based solely on achieving the identified performance parameters in the purchase package. I apologize if this is redundant to recent discussions, I just wanted to ensure that we are all clear on this.

>>> <gking@bbpwr.com> 11/07/02 05:11AM >>>

Phil,

I was out of the office on 11-6-02 and I will also be out today 11-7-02, I will pass this information about the testing on to Qingsheng Lin. IP will perform the testing, and Q. lin will witness the testing, the test procedure will be forward to IP.

I did receive your message, I will be back in the office Friday to verify the testing procedure.

Thanks
George

"Phil Hailes"
<Phil-H@ipsc.com>
To: <gking@bbpwr.com>, <qlin@bbpwr.com>
cc: "Garry Christensen" <Garry-C@ipsc.com>, "James Nelson" <JIM-N@ipsc.com>
11/06/2002 Subject: Testing Next Week, Wednesday, Nov 05:40 PM 13.

George,

We are planning on running a test on the mill in question, the end of next week. Wednesday, Nov 13.

We hope that you are as willing to spend the money being here for the installation and the final test (the really important one) as you are to be here for the initial test (the existing throats are worn).

I've called and left you a message. Please give me a call back to verify.

Thanks
Phil

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This footnote also confirms that this email message has been scanned for the presence of computer viruses.

CC: Jerry Hintze

IP12_002769

Babcock Borsig Power Inc.
5 Neponset Street
Worcester, MA 01606
TEL: (508) 852-7100
FAX: (508) 853-3944

FACSIMILE TRANSMITTAL

NAME: MR. Phil Hailes **FAX:** 435-864-6670
COMPANY: Intermountain Power **DATE:** 11/7/02
FROM: George King **PAGES:** 5 with cover
SUBJECT: Preliminary test Guideline
CC: _____

Message:

Phil,

If you have any questions and any comments.

Thanks

George King

Pre installation mill testing for rotating throat at Intermountain Power Station

1.0 Introduction

There are two (2) 950 MW B&W balanced draft units at Intermountain Power Service Corp. (IPSC). Each unit is fired with a total of 48 burners arranged with 24 burners on opposite walls. Steam flow is 7,000,000 pph SH and 5,500,000 pph RH. Steam conditions are 1005/1005 °F and 2540/580 psig SH/RH, respectively.

There are eight (8) B&W MPS 89 mills in the fuel handling system per unit. Each mill feeds six (6) burners. Currently, the unit operates with seven (7) mills for full boiler load requirement. The fuel flow is about 50 tph per mill

Based on Contract 201042 awarded by IPSC, BBPI will retrofit the existing stationary throat in Mill 1B with a rotating throat designed by BBPI. According to BBPI Proposal No. 501103 Rev.2, IPSC will perform pre-and-post-installation mill baseline/performance testing on the same mill to evaluate the performance of the rotating throat. BBPI will witness the testing.

The fuel analysis of the coal currently burned at the plant is as follows. This was provided by IPSC and is used as the design basis for the new supplied rotating throat.

HGI 48
%H₂O 8.06
HHV Btu/lb 11,761

%Ash 9.36
% Sulfur .57
% Volatile 34.07
% Na₂O 2.22
Softening Temp 2,194

2.0 Test Objective

To obtain the data of mill performance with the existing stationary throat. These data will be used to compare/evaluate the performance of new supplied rotating throat.

3.0 Test matrix and mill control setup

		Mill control	Sample requested	Sample analysis
1	Max. mill load	<ul style="list-style-type: none"> Feed rate manual. PA flow, mill exit temperature, roller loading seal air all to be set at automatic 	<ul style="list-style-type: none"> One raw coal sample from coal feeder per test run. Pulverized coal sampling for all six coal pipes 	<ul style="list-style-type: none"> Raw coal samples: Approx., ult., HGI Pulverized coal samples: Moisture, fineness
2	80% mill load	Same as above	Same as above	Same as above
3	60% mill load	Same as above	Same as above	Same as above

11/7/2002
MPS Mill testing procedure @ IP v1.doc

Notes:

1. Mill needs to be stabilized at least one (1) hour before each test.
2. Data acquisition time should be scheduled to align with the sampling time period.
3. All samples should be split for separate analysis by BBPI Lab in Worcester
4. Primary airflow measurement (PA duct traverse) is required for each test. Dirty air testing may be used as a substitute if PA duct traverse is not available.

4.0 Data acquisition

The attached boiler and mill system data sheets should be completed every hour for each test run. Computer screen print-out may be used as supplements only to these data sheets.

5.0 Manpower required for the test:

IPSC:

- Two (2) people for pulverized coal fineness testing, and dirty air testing if applied
- One (1) person for data acquisition aligned with the sampling time period
- If need to perform primary airflow measurement by PA duct traversing, another two (2) people are required in order to align primary airflow measurement with the sampling time period.

BBPI:

- One FED engineer for witness

6.0 Testing tool/instrumentation

- Coal fineness sampling kit for pulverized coal fineness testing
- Clean air or dirty air testing kit for Primary airflow measurement
- Sample bags for fineness samples and for raw coal samples.

Note:

1. BBPI will provide testing tool/instrumentation upon IPSC request.
2. BBPI recommends IPSC to purchase one (1) field service engineer per diem for the assistant of performing fineness and clean or dirty air test.

MPS mill test data sheet **For rotating throat at Intermountain Power Station**

Date				
Time				
Unit				
Unit load, MW				
Boiler steam flow, kpph				
Turbine throttle press., psig				
Air heat outlet temp., °F				
ED fan disch. Press., "wc				
Windbox press., "wc				
Barometric press., "Hg				
Relative humidity, %				
Mill system control room data				
Mill no.				
Air flow, kpph				
Fuel flow, kpph				
Mill inlet temp., °F				
Mill outlet temp., °F				
Hot air damper, %LDG				
Tempering air damper, %LDG				
PA air damper, %LDG				
Seal air damper, %LDG				
Mill inlet press., "wc				
Mill outlet press., "wc				
Seal air header press., "wc				
Seal air differential, "wc				
Roller loading press., psig				
PA fan & mill bus voltage				
PA fan motor amps				
Mill motor amps				
Mill system local data				
Mill inlet temp., °F				
Mill outlet temp., °F				
Mill temp. below classifier, °F				
Hot air damper, %LDG				
Tempering air damper, %LDG				
PA air damper, %LDG				
Seal air damper, %LDG				
Mill inlet press., "wc				
Mill outlet press., "wc				
Mill press. below classifier, "wc				

11/7/2002
MPS Mill testing procedure @ IP v1.doc

IPSC Unit #1, Mill 1B
MPS 89 mill testing
201042

BABCOCK BORSIG POWER 
ENERGY SYSTEMS & SERVICES

11/7/2002
MPS Mill testing procedure @ IP v1.doc

NOV. 08 2002 P. 5

NOV. 7. 2002 8:44AM DB RILEY PROP OPER

IP12_002774

BABCOCK BORSIG POWER
ENERGY SYSTEMS & SERVICES



Fax Cover Sheet

Fax: (508) 852-7548 or (508) 852-7558

Tel.: (508) 854-3822

DATE: July 9, 2002

FAX TEL.#: 435 864 6670

NAME OF COMPANY: Intermountain Power

ATTN: Phil Hailes

PAGES: 1/6

RE: Throat sketches

FROM: Qingsheng Lin

Mr. Hailes:

Attached are sketches of different throat designs. Please review them and then we can talk later. I'd also like you to send us the sketch shown what you expect.

Regards;

Q. Lin

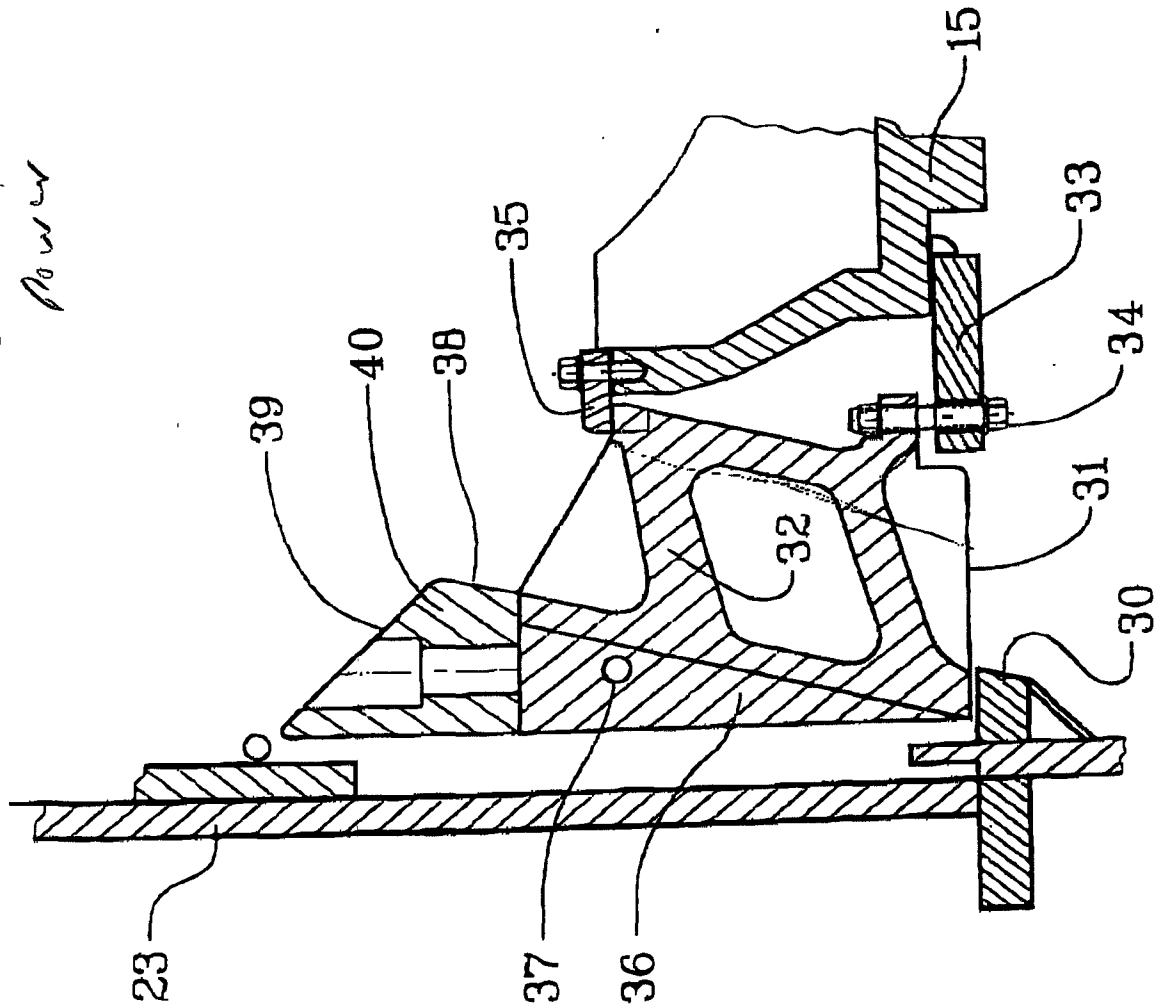
IP12_002775

5,549,251

Sheet 2 of 4

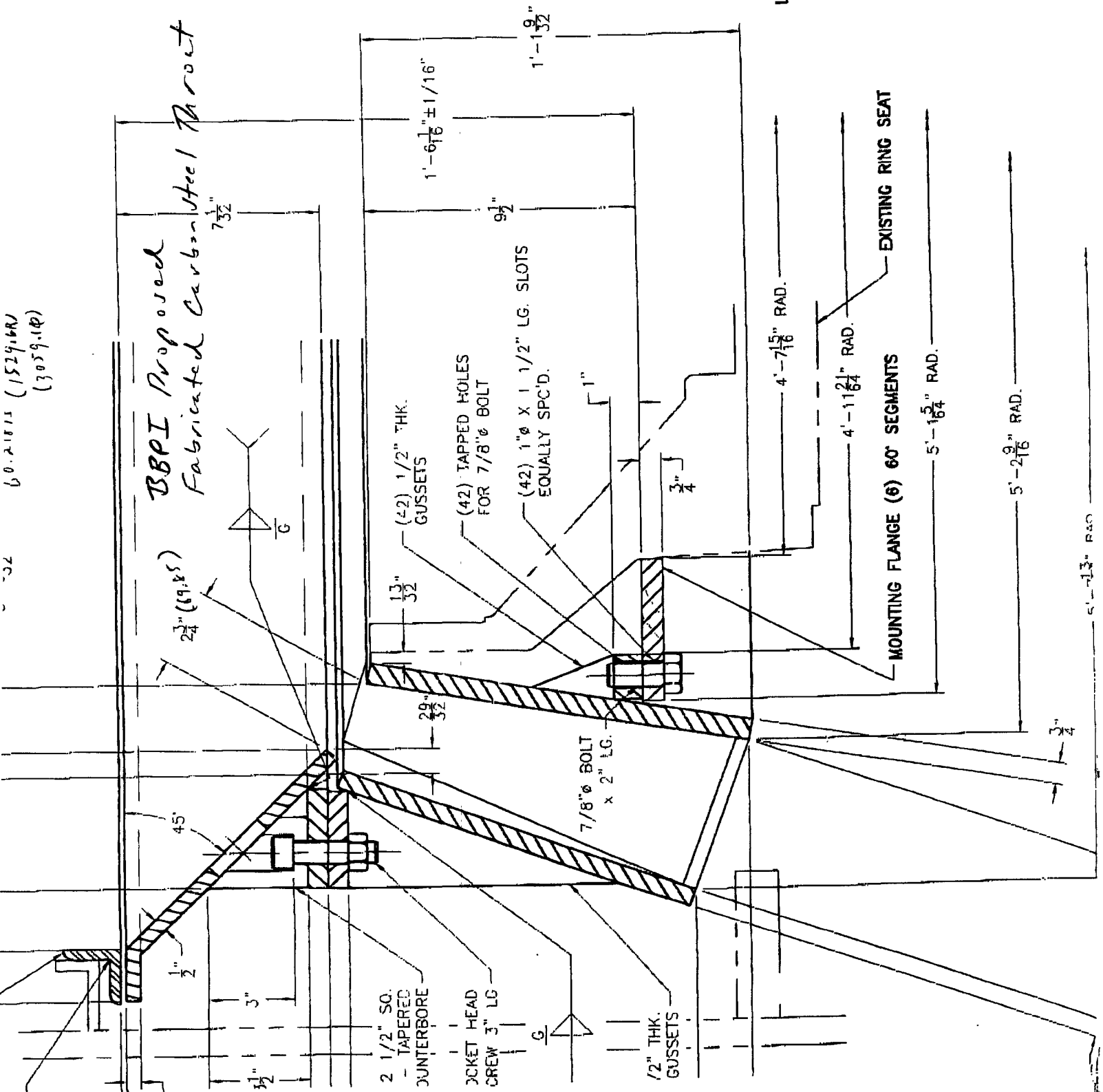
Aug. 27, 1996

*Technomic Design
Existing @ International
Power*



60-21815 (1524.6RU
(3059.1P)

32



IP12_002777

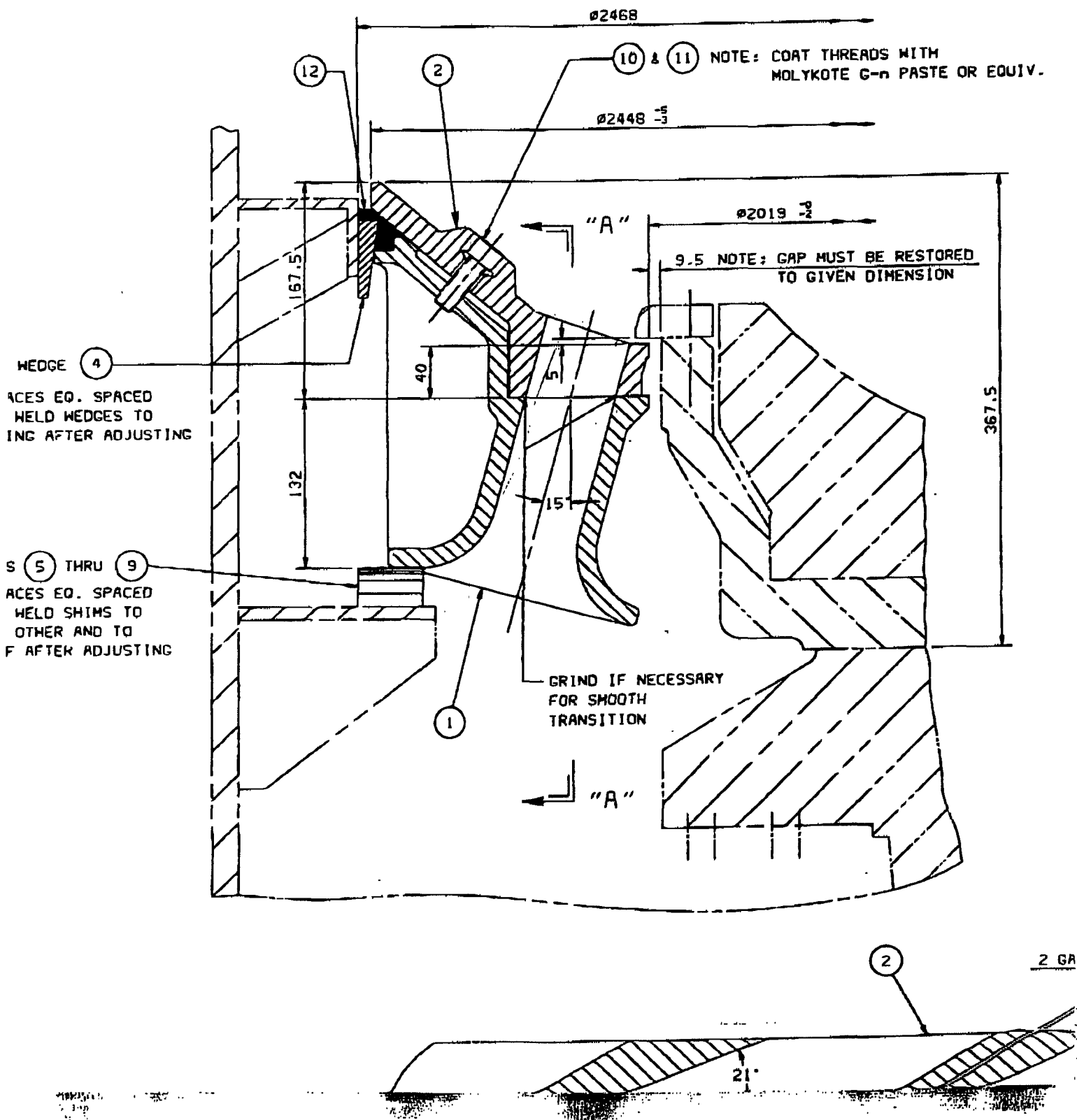
Germany Fixed Nozzle
 Design - Stationary Throat
 Can be converted to rotating design

6

7

8

9



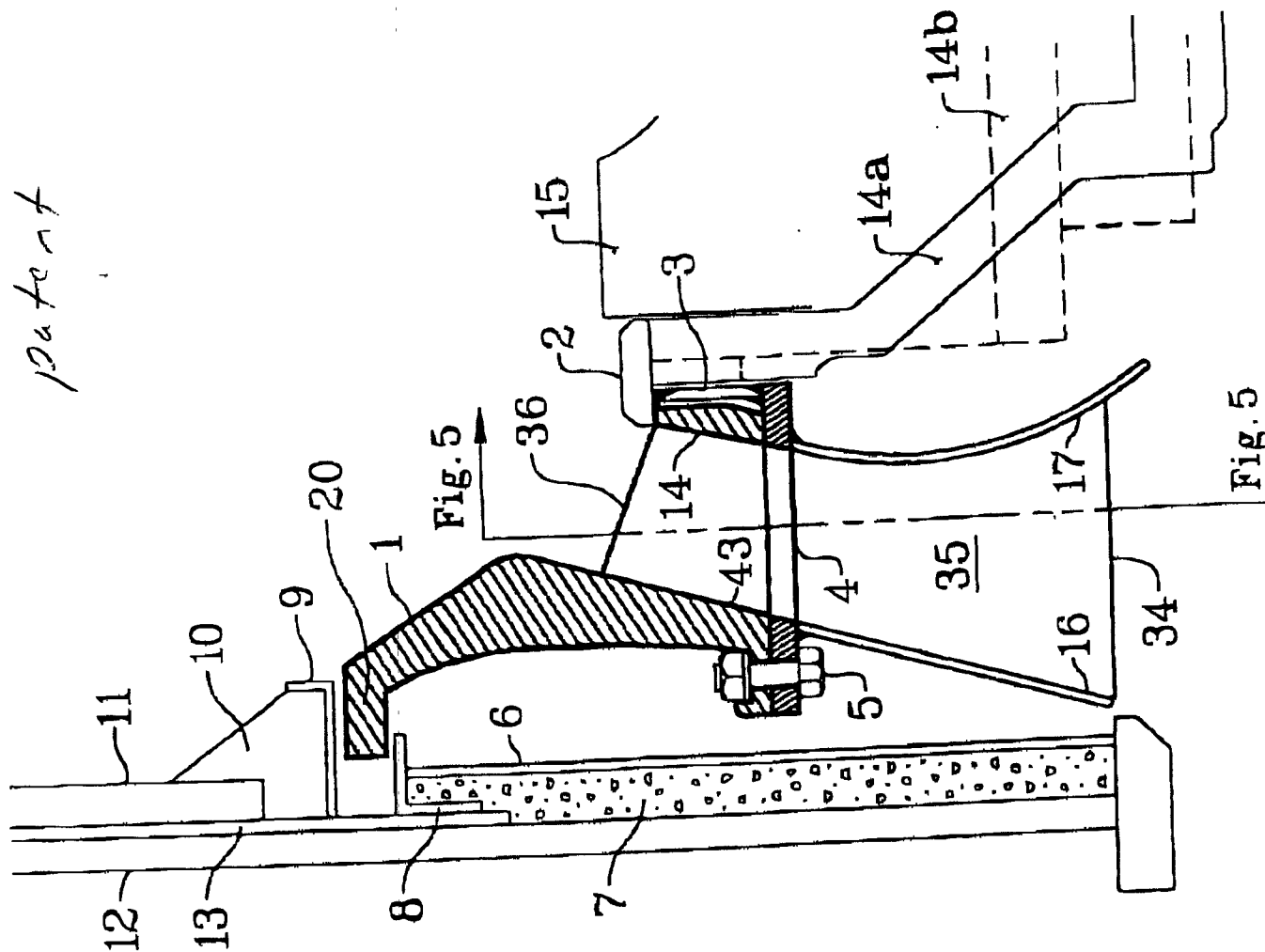
IP12_002778

Patent

Jun. 1, 1999

Sheet 4 of 5

5,908,167

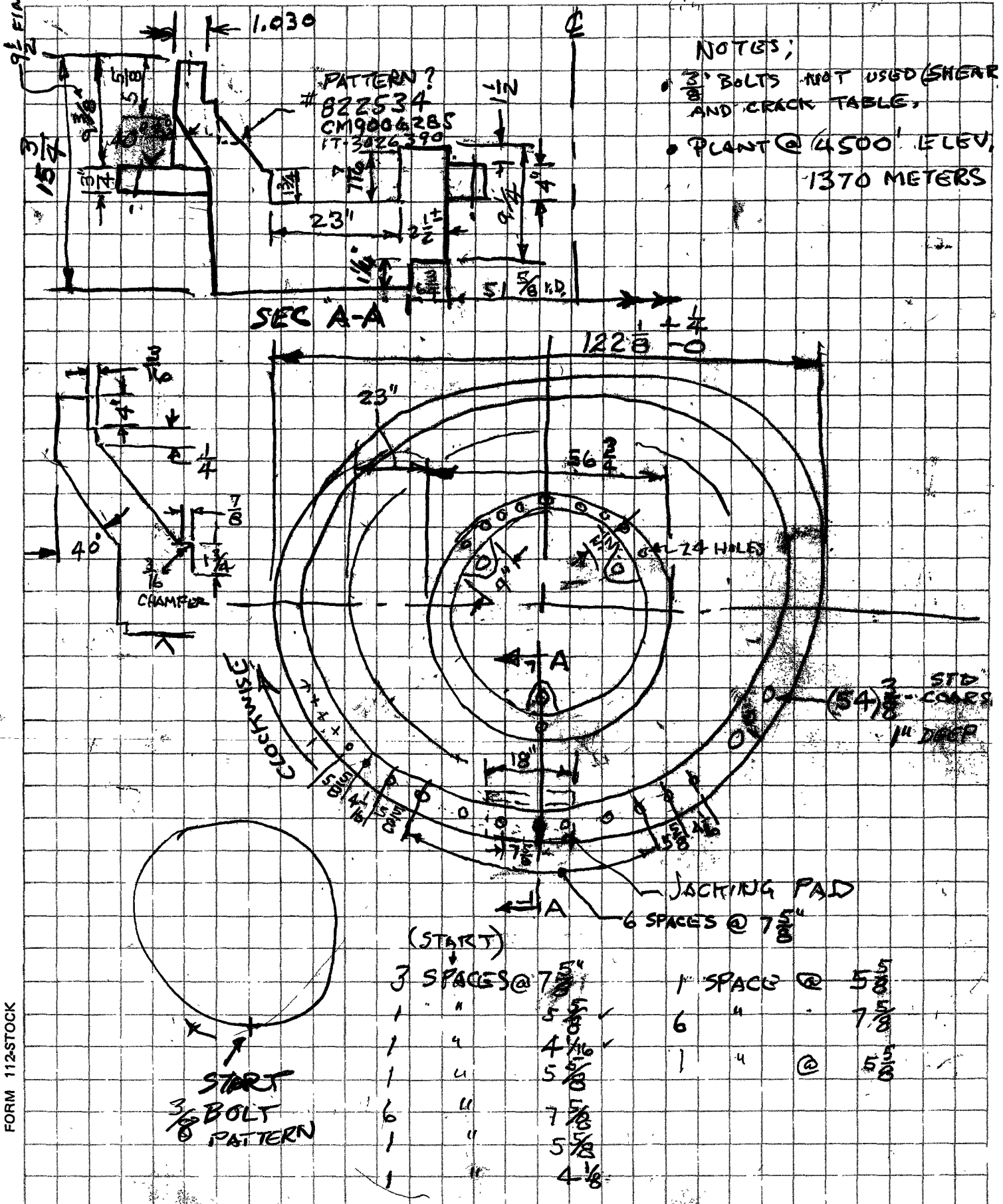
*Technomic Latent
patent*

IP12_002779

DB RILEY WORCESTER, MASS.

COMPUTED BY NO & FRAN DATE 5-9-02 CONTRACT NO. _____ PAGE NO. _____
 CHECKED BY _____ DATE _____ SUBJECT INTERMOUNTAIN POWER
 REVIEWED BY _____ DATE _____ DELTA, UT
 APPROVED BY _____ DATE _____

MPS 89G MILL 1C



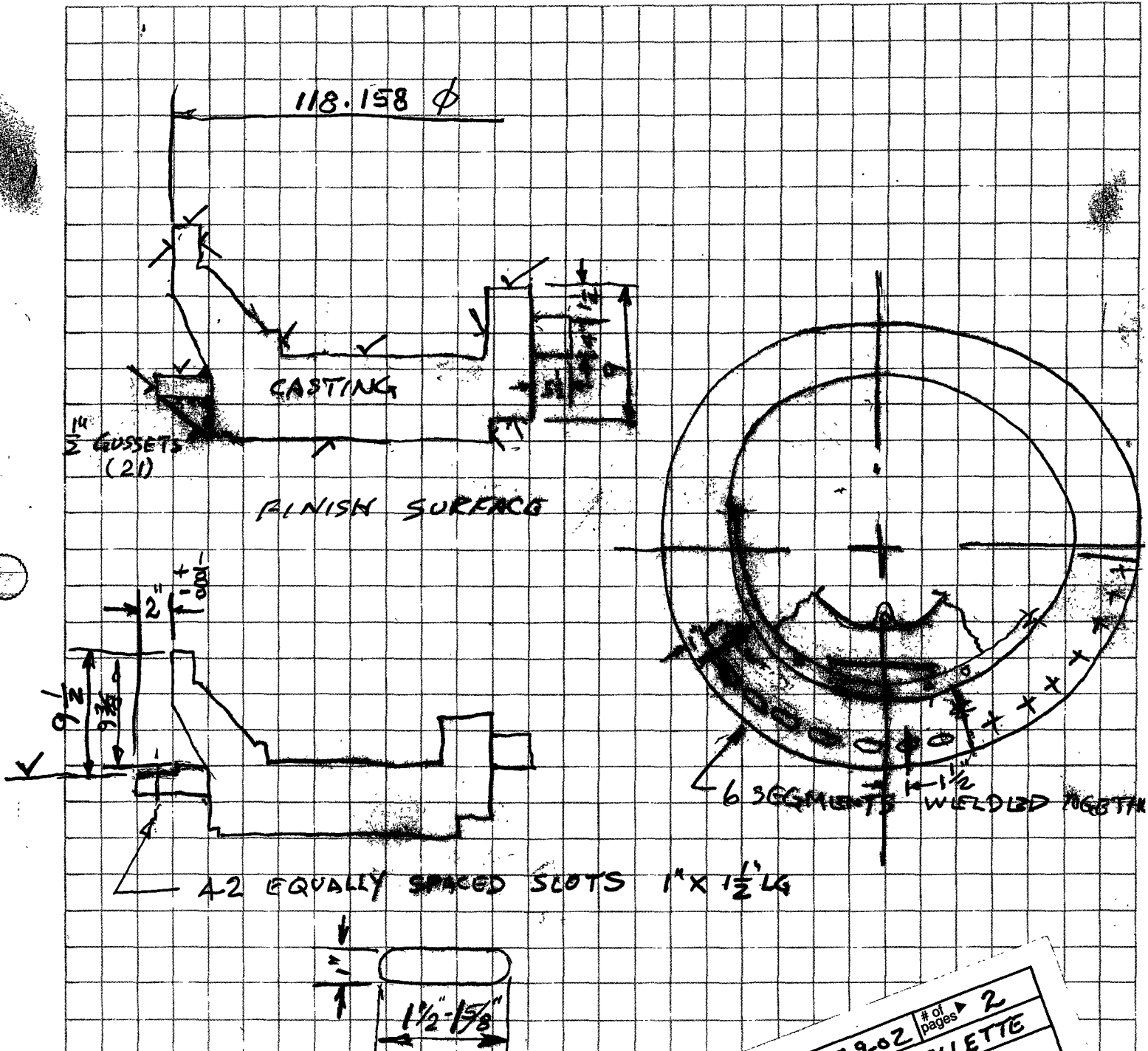
FORM 112-STOCK

IP12_002780

DB RILEY WORCESTER, MASS.

COMPUTED BY IVO E FRAN DATE 5-9-02 CONTRACT NO. _____ PAGE NO. _____
 CHECKED BY _____ DATE _____ SUBJECT INTERMOUNTAIN POWER
 REVIEWED BY _____ DATE _____
 APPROVED BY _____ DATE _____

MPS 89G MILL IC
GRINDING TABLE CARRIER



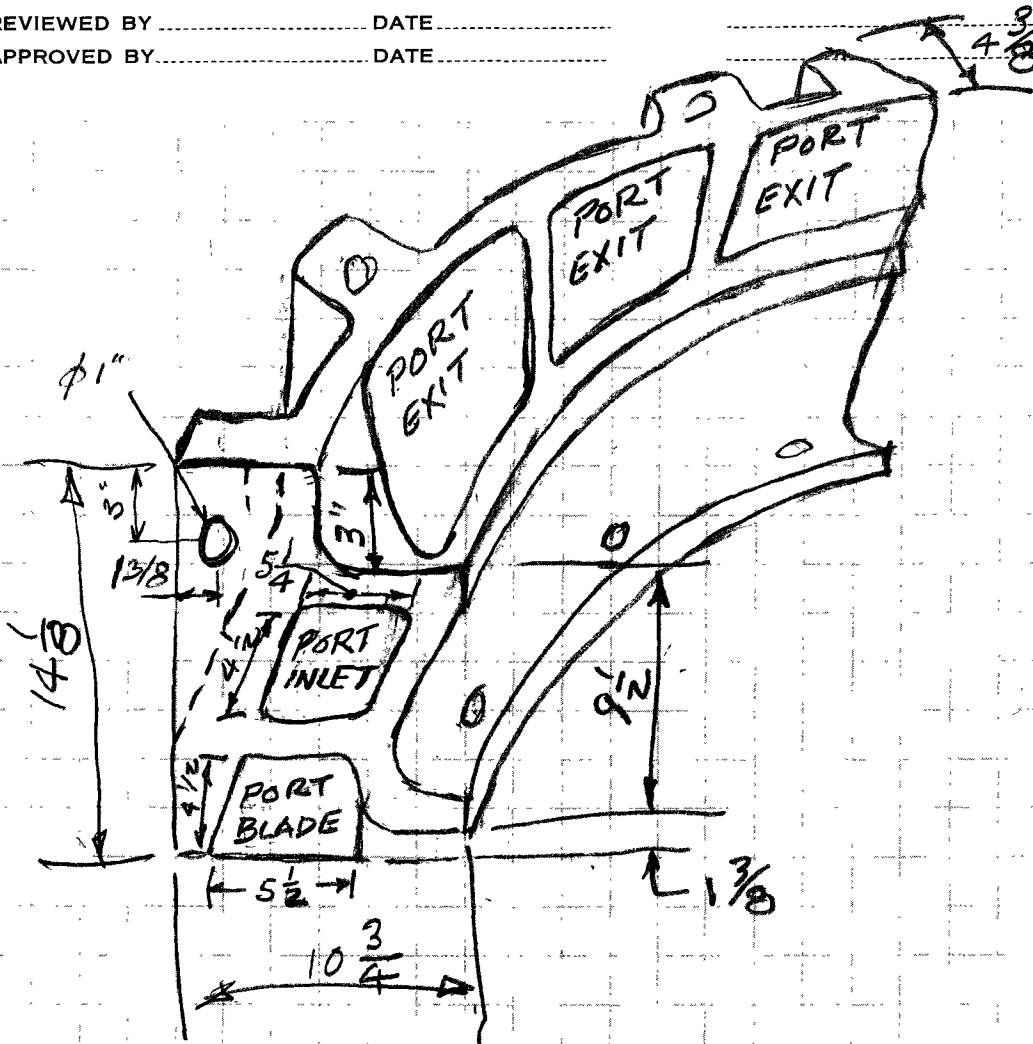
Post-it® Fax Note		7671	Date <u>5-9-02</u>	# of pages <u>2</u>
To <u>C. PENTERSON</u>		From <u>F. OUELLETTE</u>		
Co./Dept.		Co.		
Phone #		Phone #		
Fax # <u>508 852-7558</u>		Fax #		

FORM 112-STOCK

IP12_002781

DB RILEY WORCESTER, MASS.

COMPUTED BY IVO F. FRAN DATE 5-9-02 CONTRACT NO. _____ PAGE NO. _____
 CHECKED BY _____ DATE _____ SUBJECT INTERMOUNTAIN POWER
 REVIEWED BY _____ DATE _____
 APPROVED BY _____ DATE _____



14 ROTATING AIR NOZZLE SEGMENTS

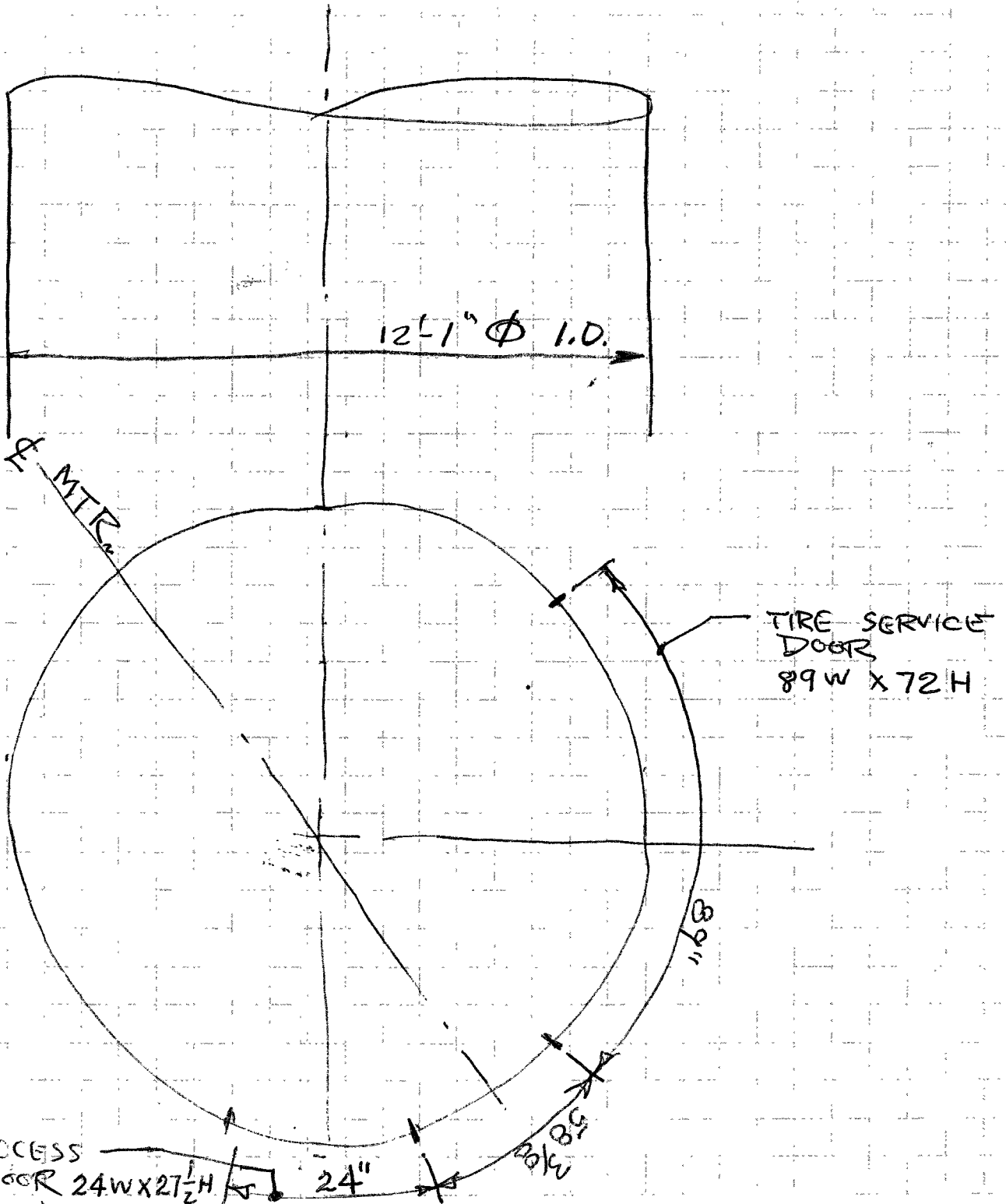
Post-it® Fax Note 7671		Date <u>5-9-02</u>	# of pages <u>3</u>
To <u>C. PENTERTSON</u>		From <u>F. OUELLETTE</u>	
Co./Dept. _____		Co. _____	
Phone # _____		Phone # _____	
Fax # <u>508 852-7548</u>		Fax # _____	

DB RILEY WORCESTER, MASS.

COMPUTED BY IVO & FRAN DATE 5-9-02 CONTRACT NO. _____ PAGE NO. _____
 CHECKED BY _____ DATE _____ SUBJECT INTERMOUNTAIN POWER
 REVIEWED BY _____ DATE _____ LOCATION OF ACCESS DOORS
 APPROVED BY _____ DATE _____ MPS 89G MILL 1C

16'-10" FROM TABLE TO OUTLET
 PRESS TAP @ CLASSIFIER

INFO REQUESTED
 BY Q. LIN

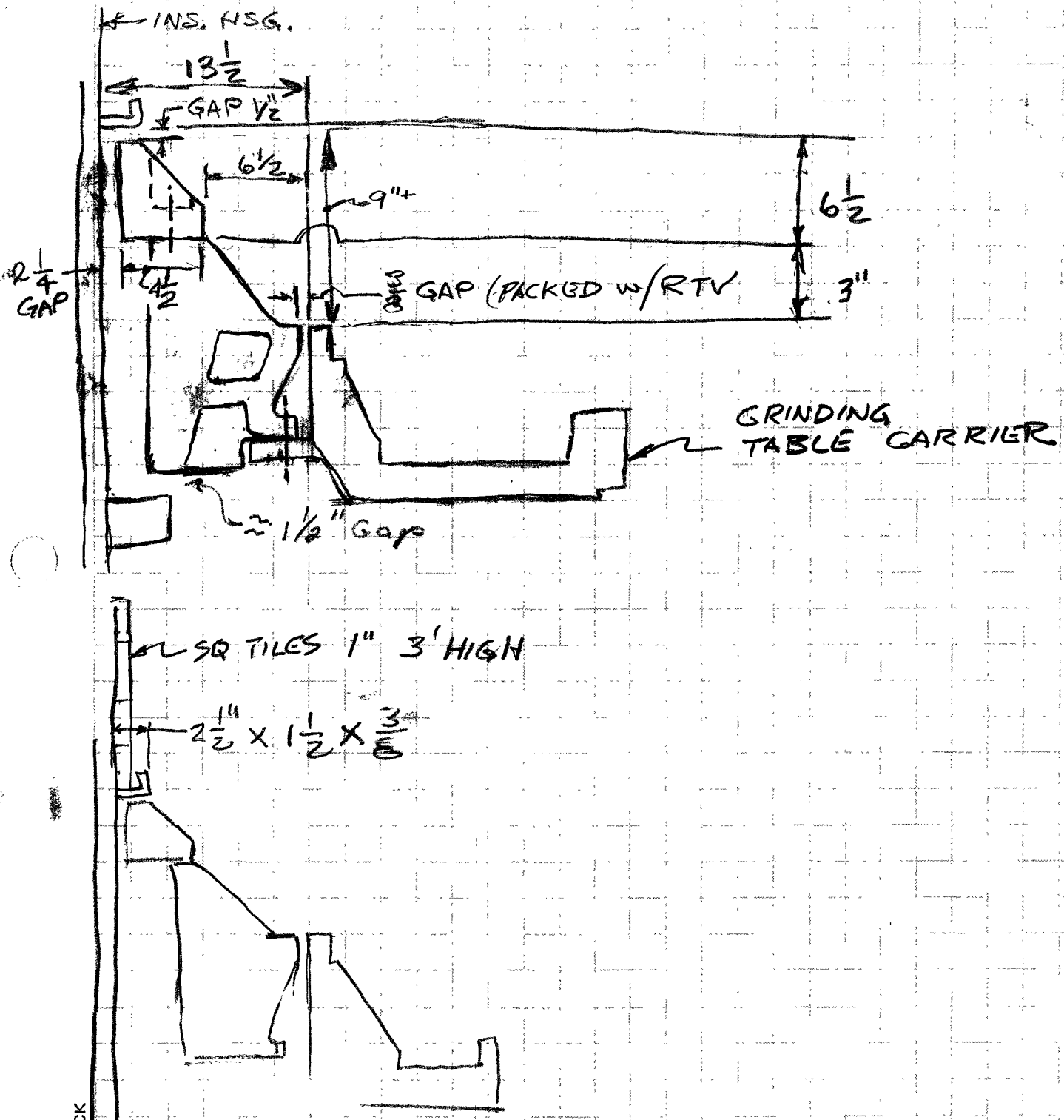


FORM 112-STOCK

IP12_002783

DB RILEY WORCESTER, MASS.

COMPUTED BY NO. 1 FRAN DATE 5-9-02 CONTRACT NO. _____ PAGE NO. _____
 CHECKED BY _____ DATE _____ SUBJECT INTERMOUNTAIN POWER INC
 REVIEWED BY _____ DATE _____
 APPROVED BY _____ DATE _____ ROTATING AIR NOZZLE ASSY.



FORM 112-STOCK

IP12_002784

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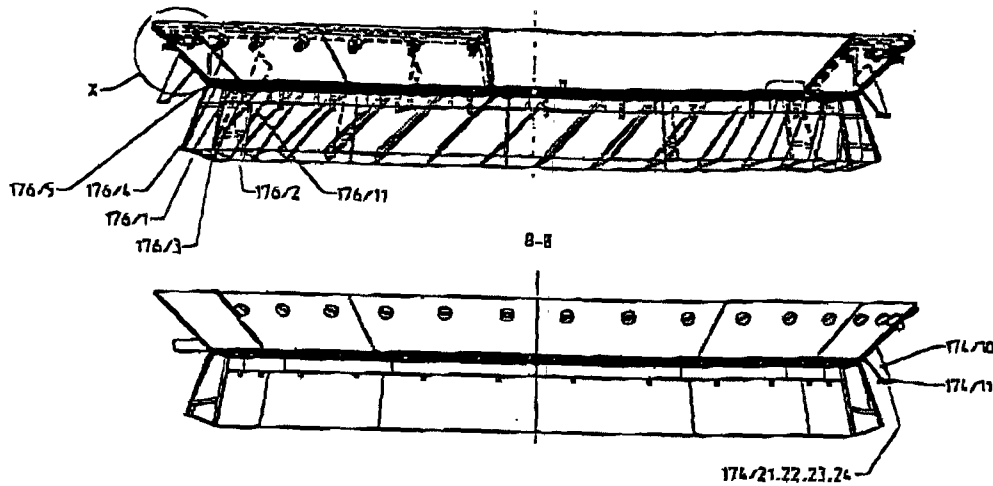
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13

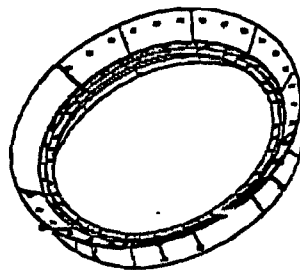
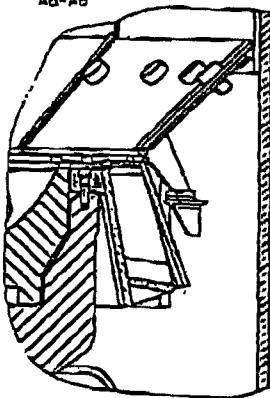
14

L#35 864 6670

A-A



AB-AB



E-E

176/62



BABCOCK BORSIG POWER, Inc.

ROTARY THROTTLE ASSEMBLY
DESIGN No. 3

ROTARY THROTTLE ASSEMBLY
DESIGN No. 3

501103-10-00

IP12_002785

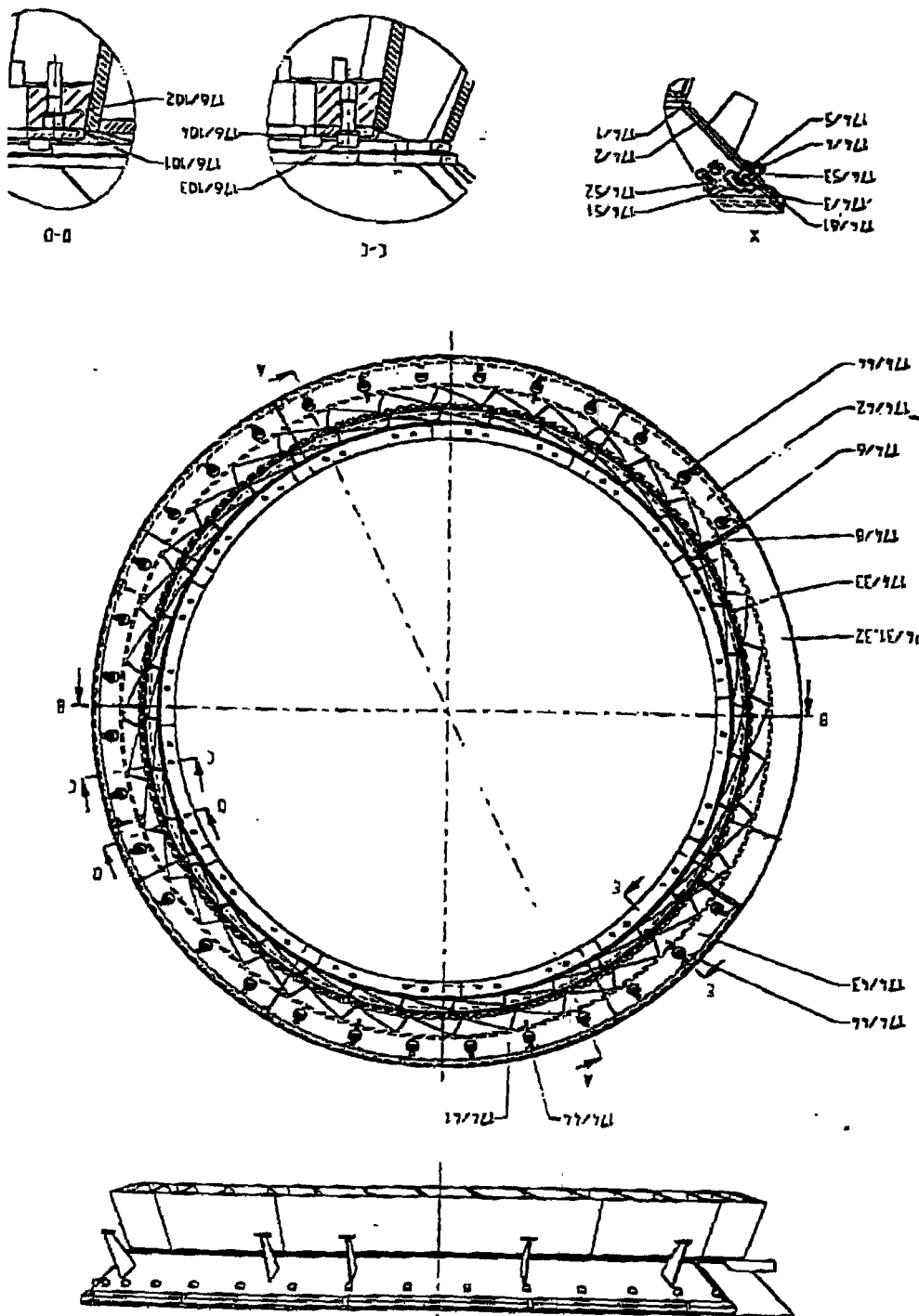
JUN-14-02

05:04PM

FROM-Babcock Borsig Power

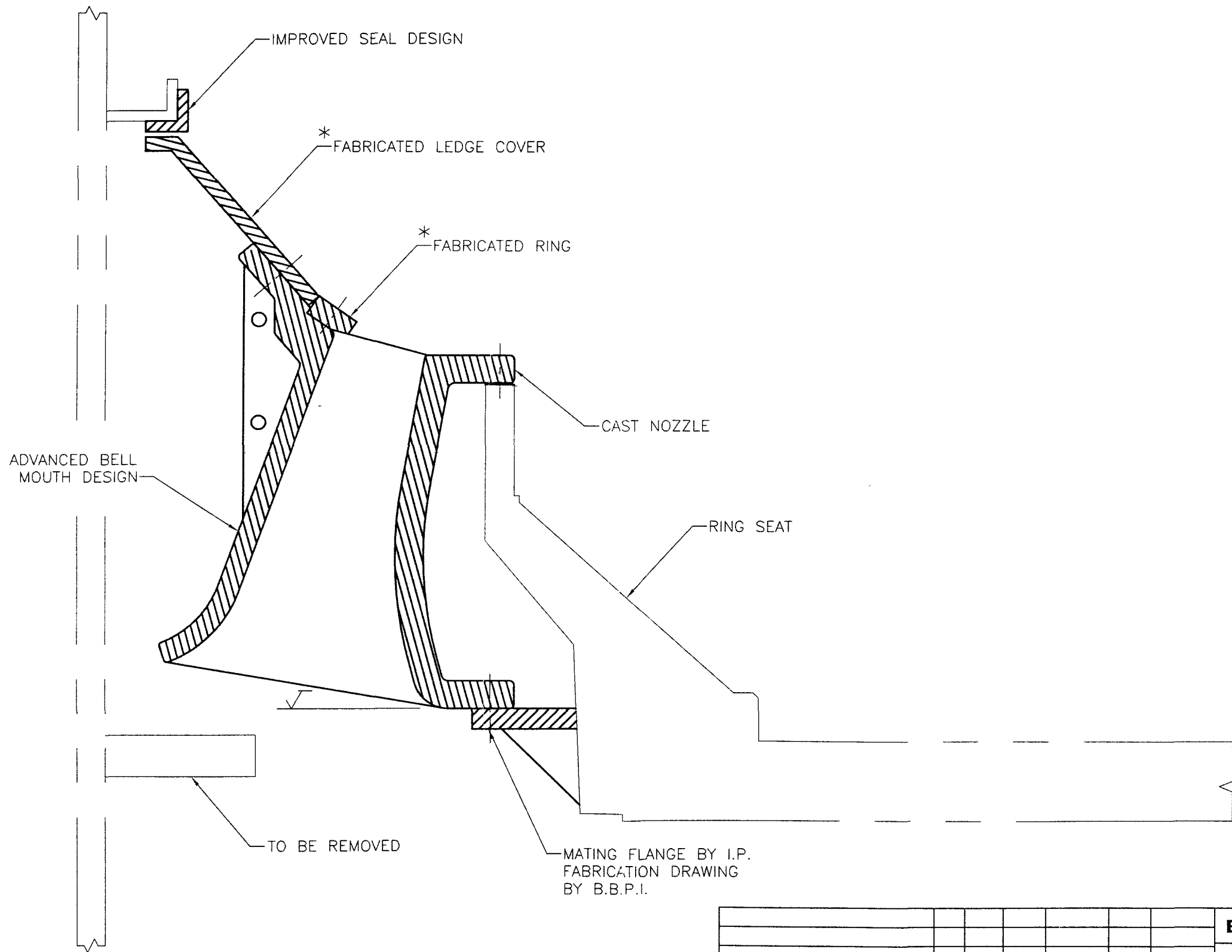
+5088541177

T-239 P.002/002 F-379



501103-10

IP12_002786



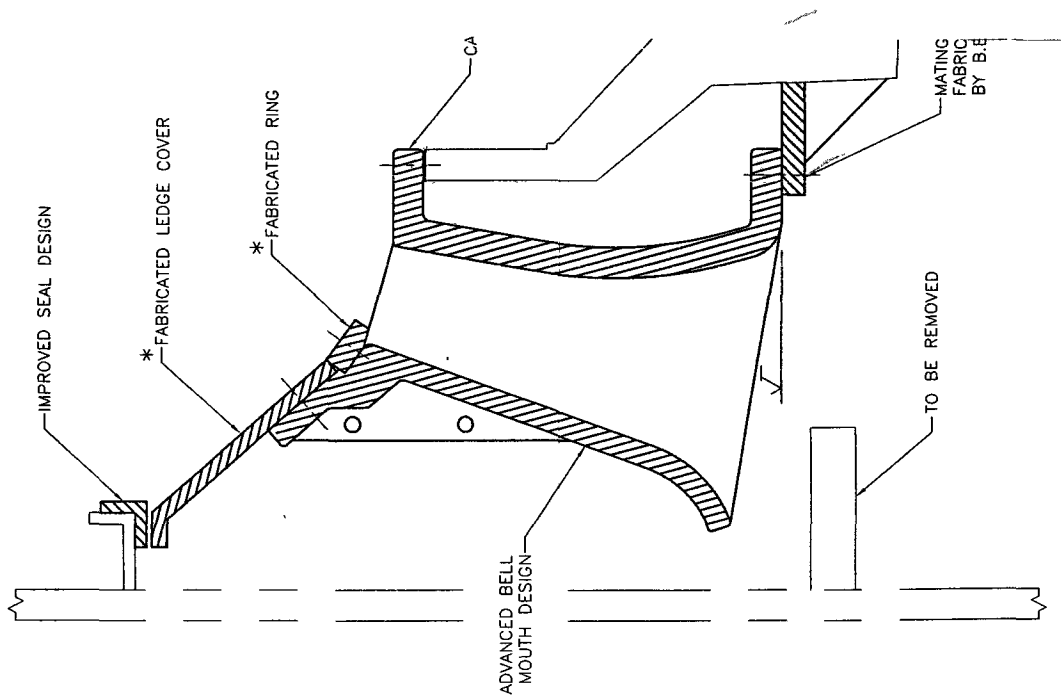
* NOTE: THESE COMPONENTS COULD BE INTERGRATED INTO ONE PART IN THE FUTURE, AFTER PROTOTYPE TESTING AND OPERATION

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							BABCOCK BORSIG POWER, Inc.	
							PROPOSED ARRANGEMENT OF ROTATING THROAT FOR MPS 89 G MILL INTERMOUNTAIN POWER, UTAH	
							DWG NO. FED-071902-00	
							SDA Name	
							SDA No.	
Alteration		No.	By	Chk	Date	Appd	Date	
DO NOT SCALE Use dimensions only		Functional Review App'd/Date		App'd/Date		Do not use this drawing for fabrication unless dated and signed approved		
SCALE 3 in=1ft.	DRAWN / DATE MG		CHECKED / DATE		APP'D / DATE			

IP12_002787

AC



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AC

From: <gking@bbpwr.com>
To: <phil-h@ipsc.com>
Date: 9/20/02 11:59AM
Subject: Rotary Throat Schedule (Job # 201042)

Phil,

This is a brief schedule up-date on the rotary throat, at this time the ship date from the machine shop to Intermountain Power is 11/22/02, I'm working with the foundry and the machine shop to improve the delivery time. I will up-date you on Friday the 27th on the delivery schedule should it improve or not I will keep you up-dated.

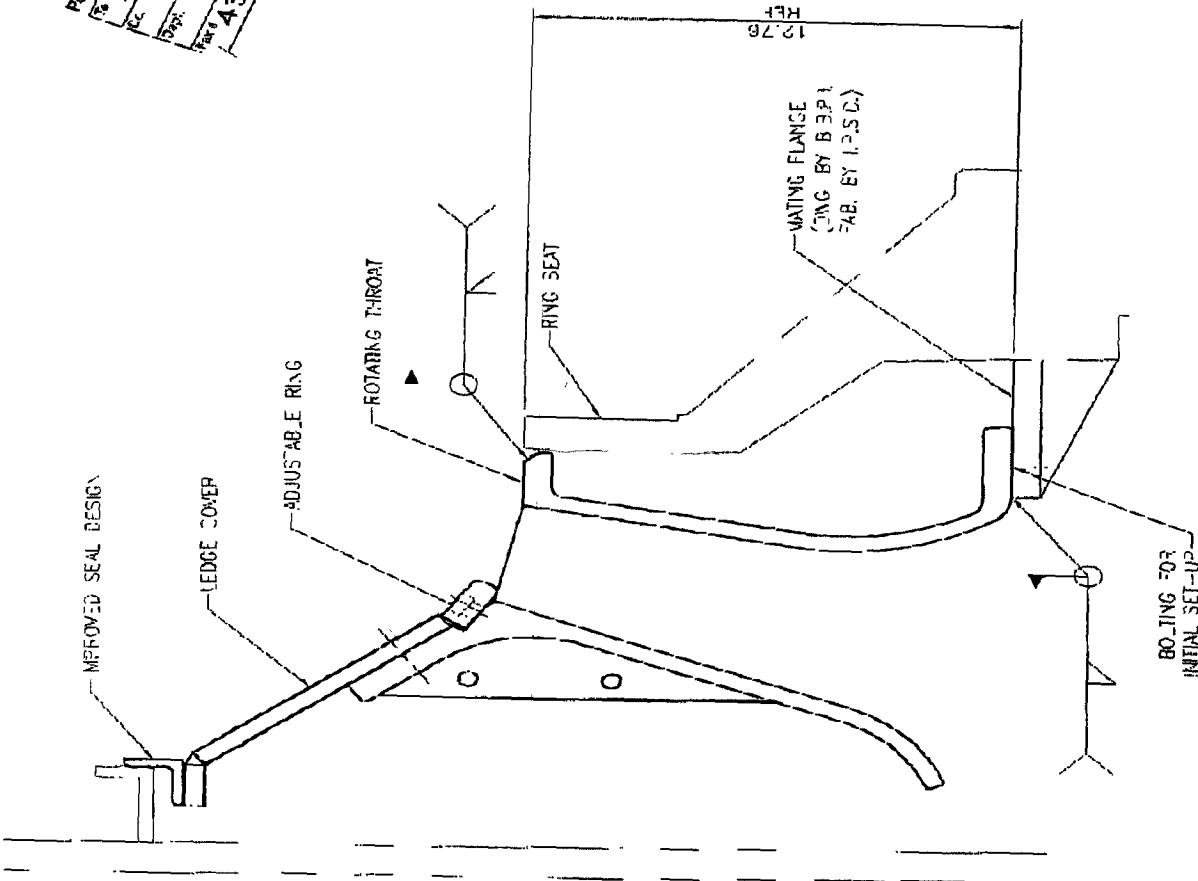
Regards

George King

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CC: <estrzelewicz@bbpwr.com>, <bfaia@bbpwr.com>, <dcoates@bbpwr.com>, <fouellette@bbpwr.com>, <bkennedy@bbpwr.com>, <mlynch@bbpwr.com>



Post-It: Brand fax transmittal memo 7/27/02
To: PHIL HAILES
Cc: I.P.S.C.
Date: 9/17/02
From: FRANK QUELLETTE
Re: B.S.P.I.
Part: 508 854-3872
Qty: 508 852-7548
Total pages: 1

BABCOCK BORSIG POWER, Inc.									
PROPOSED ARRANGEMENT OF ROTARY THROAT RETROFIT FOR MPS 89 G MILL INTERMOUNTAIN POWER, UTAH									
XMG NO. FED-091002-01									
SDA									
REV. SUPPORT & ADDED WELD									
Alteration No. By Chk Date App. Note									
DC NOT SCALE Functional Review									
Additions (Date) (Appr) (Date)									
Do not use this drawing for fabrication unless dated and signed approved									
SCALE DRAWN / DATE CHECKED / DATE APPD / DATE									

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From: <gking@bbpwr.com>
To: <Phil-H@ipsc.com>
Date: 9/16/02 8:31AM
Subject: MPS Rotating Throat

Phil,

On Friday, September 13th, a meeting was held in the Worcester office with the Vice President of the foundry that will be performing the work on the rotating throat segments.

We Babcock Borsig Power are now back on track with the rotating throat segments, we are still targeting delivery the week before Thanksgiving. I will keep you informed weekly on the progress of the rotating throat segments.

Should you have any questions please call me at 508-854-3751.

Regards

George King

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CC: <jim-n@ipsc.com>, <dcoates@bbpwr.com>, <bfaia@bbpwr.com>, <tmartinko@bbpwr.com>, <cpenterson@bbpwr.com>

IP12_002791

BABCOCK BORSIG POWER

5 Neponset Street
Worcester, Ma. 01606
(508) 852-7100

Fax

To:	Phil Haines	From:	George King
Fax:	435-864-6670	Pages:	2 including cover
Company:	Intermountain Power	Date:	09/12/2002
Re:	MPS Rotary Throat	CC:	

☐ Urgent ☐ For Review ☐ Please Comment ☐ Please Reply ☐ Please Recycle

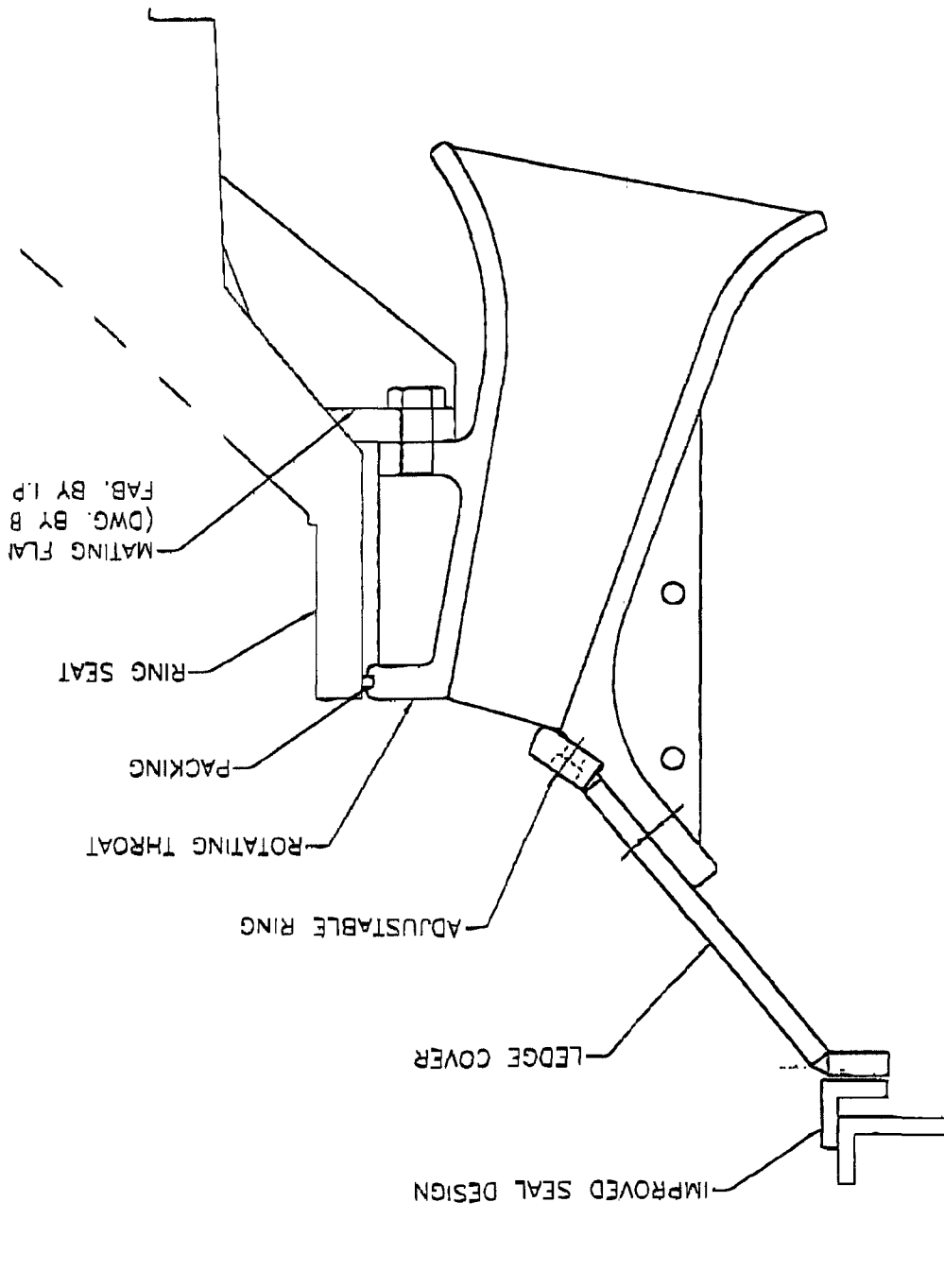
Attached is a brief write-up from stress analysis on the modified rotating air nozzle mid support, along with drawing FED -091002-00 for your review and comments.

This newer design concept eliminates the need for bolting at two places. The two place bolting was needed to minimize bending stresses on the mounting flange. Results of the analysis are similar to the earlier design. The supporting flange and the mounting flange on the grinding table shell stays at 0.75" thick.

The top of the nozzle still should not be welded to the grinding table shell, this is due to thermal differences between the air nozzle and the grinding table shell. However, the bolting at the upper edge of the grinding table shell has been eliminated. If there are any questions , please advise.

Regards
George King

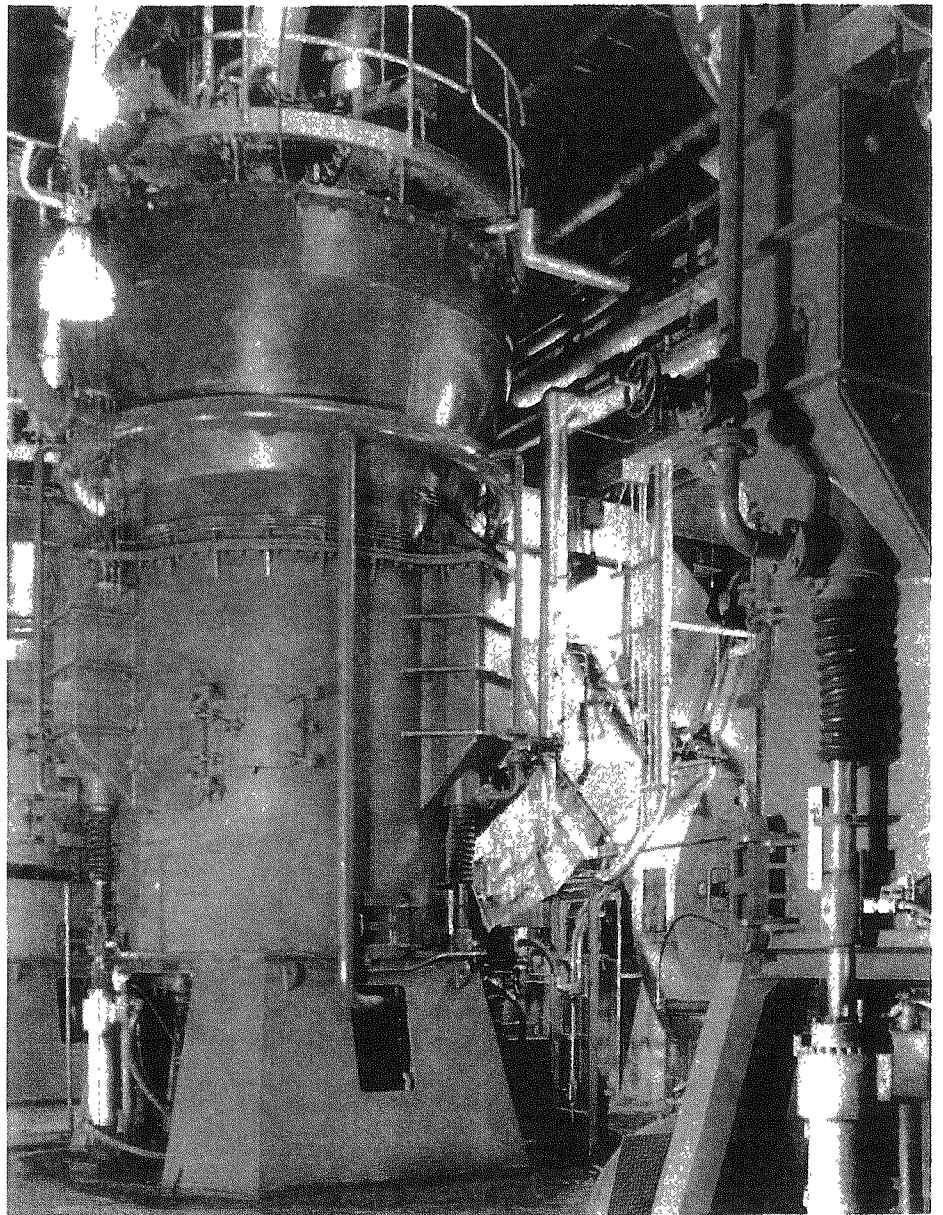
SDA Name		MC		SCALE 3 in=1ft.		Box 15040, or disclose to proprietary R. Inc., 2002.	
SDA No.		DRAWN / DATE		CHECKED / DATE		APPD / DATE	
DWG. NO. FED-091002-00		Do not use this drawing for fabrication unless dated and signed approved		App'd/Date		Use dimensions only	
BABCOCK BORSIG POWER, Inc. PROPOSED ARRANGEMENT OF ROTARY THROAT RETROFIT FOR MPS 89 G MILL INTERMOUNTAIN POWER, UTAH		Functional Review		App'd/Date		DO NOT SCALE	
		Alteration		No. By		Date	



BABCOCK BORSIG POWER

DB RILEY

The DB Riley MPS Pulverizer



Technology
Experience
Excellence

IP12_002794

DB Riley's Dynamic System

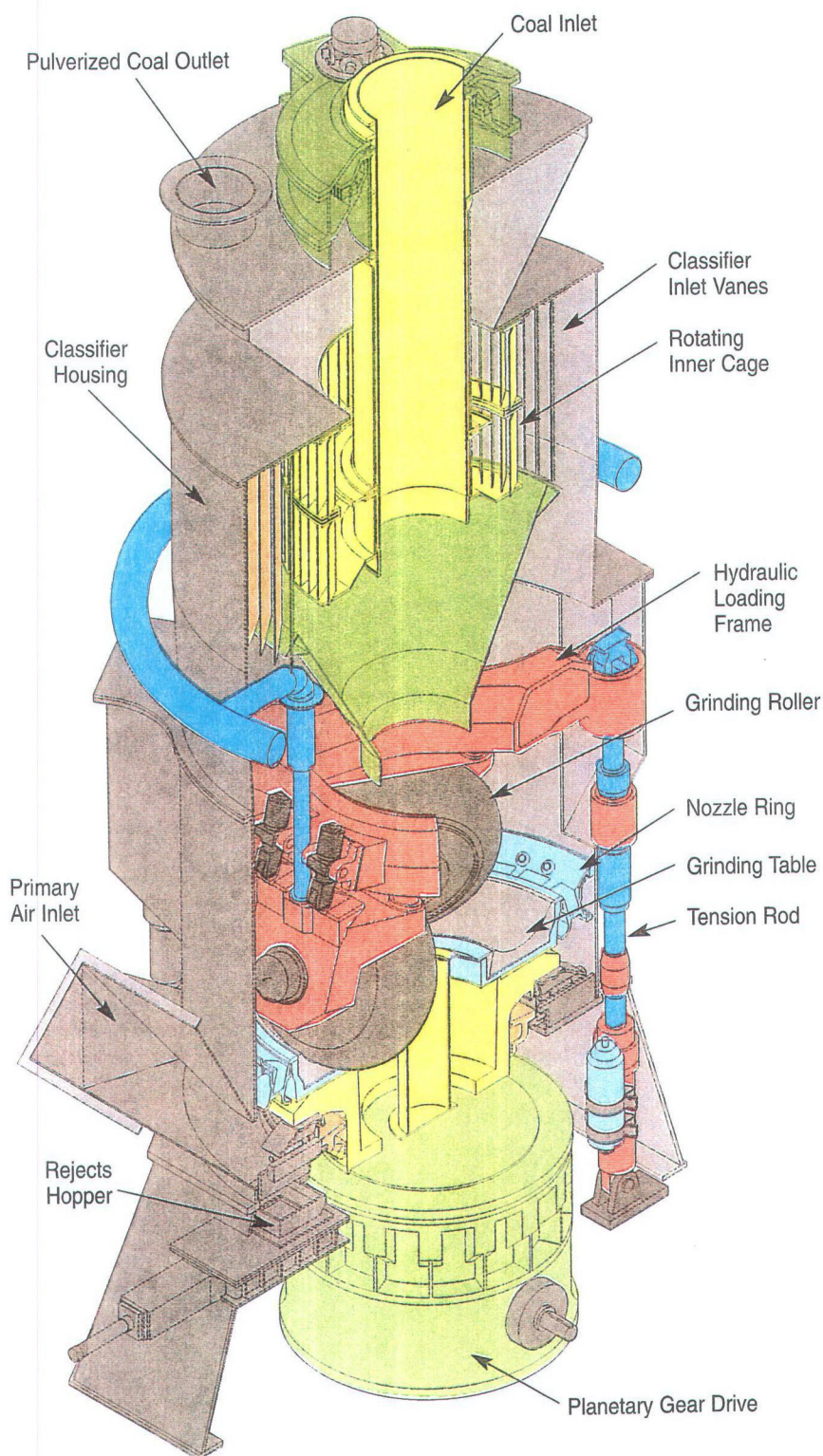
How the MPS Pulverizer Operates

Raw coal is fed through a central coal inlet at the top of the pulverizer and falls by gravity to the rotating grinding table, mixing with classifier rejects returned for re-grinding. Centrifugal action forces the coal outward to the grinding ring where it is pulverized between the ring and three grinding rollers.

Grinding load, transmitted from the tension rods through the loading frame to the roller assemblies, holds the rollers in contact with the grinding ring. The rollers adjust vertically as the depth of the coal load increases or decreases.

A nozzle ring on the outside perimeter of the grinding ring feeds primary air to the pulverizer. Pyrites and tramp metal fall through the nozzle ring openings to be scraped into a rejects hopper.

A stream of low-velocity air carries the particles of pulverized coal upward where they enter the classifier inlet vanes. Fine particles travel to the burners in the primary air stream, but the larger, heavier particles are returned to the grinding zone for further pulverization.



MPS Pulverizer equipped with SLS (Dynamic) classifier and hydraulically-loaded rollers

The DB Riley MPS Pulverizer with SLS (Dynamic) Classifier and Hydraulically-loaded Rollers

- 30 years of worldwide experience
- Dependable Babcock Borsig Power design
- Demonstrated world experience on a variety of coals

There is no other vertical spindle pulverizer with more installed combined grinding capacity and range of proven experience worldwide than the MPS Coal Pulverizer. There are now more than one thousand four hundred MPS Pulverizers installed, successfully pulverizing all types of coal.

Babcock Borsig Power enhanced the original design by investing heavily in the development of pulverizer improvements and upgrades. DB Riley has the license from its parent, Babcock Borsig Power, to manufacture and sell this improved MPS design in North America.

The MPS Pulverizer is available in two configuration options. The illustration shows the dynamic (rotating) classifier and hydraulic roller loading. The pulverizer can also be supplied with the SLK (static) classifier. A mechanical spring roller loading design is also available for installations where this configuration is more appropriate.

Classification is the key to finer coal — and finer coal means better combustion

It is important to maintain close control of the size of the coal particles delivered to the burners. Finer coal burns quickly and efficiently, reducing carbon in the flyash while maintaining low NO_x emissions. Classification is a closely controlled three-stage process

in the MPS Pulverizer, with the capability of producing fineness up to near micronized coal for improved combustion and emission control.

Grinding is efficient, with a minimal number of fine particles returned to the table for regrinding. On a retrofitted system in the U.S., the standard MPS grinding efficiency reduced the flyash carbon loss enough to increase the boiler efficiency by more than .5%. With a static classifier, this installation delivered pulverized coal at a fineness of greater than 99% through 50 mesh and greater than 80% through 200 mesh at full MPS rated output.

Raw coal is pulverized between the rollers and ring. Primary air enters the mill through an aerodynamically-ported nozzle. The swirl induces larger particles to return to the grinding track. During this first stage of classification, fine particles are carried upward in the housing in the stream of air and coarser particles fall back to the table for regrinding.

In the second stage of classification, the velocity in the upper housing decreases and larger particles are dropped out. Particles fine enough to be entrained in the stream of low-velocity air are carried to the classifier. This improved classification results in less fine particles returned for regrinding, thus less pulverizer power consumption.

The most critical classification takes place in the third stage, within the classifier section at the top of the pulverizer. This classification is dependent not only on the velocity of the primary air, but also on the close adjustment of the classifier vanes and the cyclonic action of the primary air/coal mixture that the MPS Pulverizer provides. Even though the particles may be fine enough to be carried into the classifier section, all are not sufficiently pulverized for transport to the burners. Through the centrifugal action in the classifier section, these fall to the bottom of the inner cone and are returned to the grinding zone.

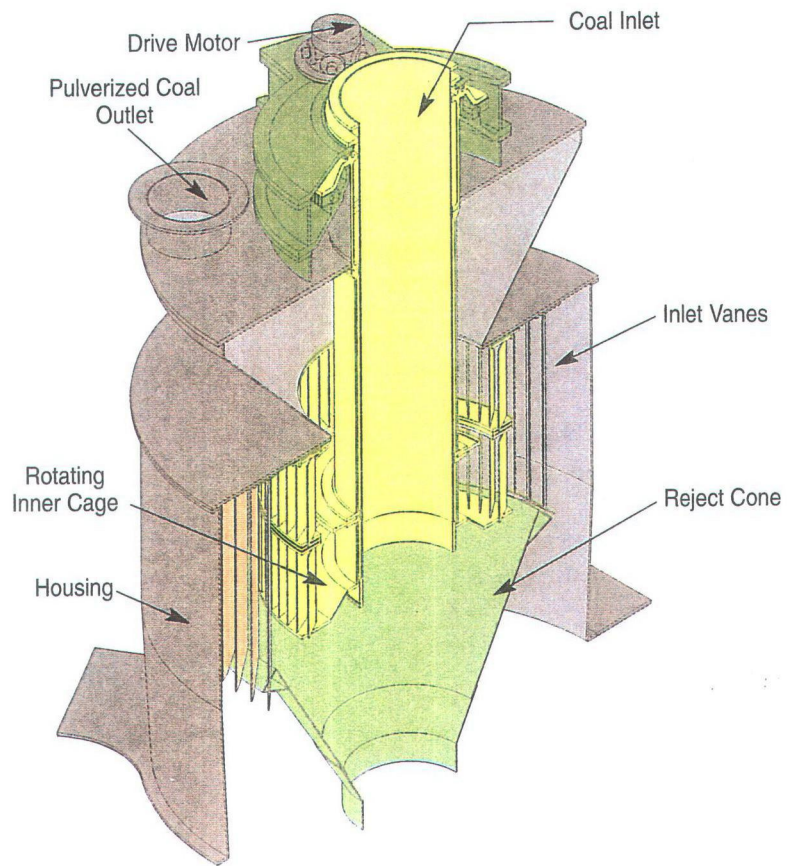
World-class pulverizer technology and DB Riley know-how works for you

The MPS Pulverizer lends itself to plant upgrades for reducing NO_x emissions. DB Riley has already retrofitted MPS Pulverizers to existing boilers to regain grinding capacity and fineness lost as a result of coal switching.

With DB Riley, you get the benefits of the capabilities of the MPS Pulverizer coupled with our extensive boiler modification know-how. DB Riley's coal pulverizing experts are ready to engineer the application of this world-class pulverizer for you as part of a *total plant emissions reduction program*.

The SLS Dynamic Classifier

- Optimizes fineness with immediate response to fuel changes
- Minimizes overgrinding, thus reducing grinding power requirement
- Enables deep-staged combustion for NO_x control without increased LOI
- Equalizes distribution of coal to outlet pipes and furnace, aiding uniform combustion and NO_x control
- Applicable to all vertical spindle pulverizer designs



The SLS dynamic classifier, developed in the 1980's, improves the sharpness of classification and provides coal fineness approaching the micronized range. This fine grinding allows the firing system to operate at lower values of NO_x with minimal levels of unburned carbon in the ash.

In the SLS design, the coal/air mixture first passes through fixed directional vanes, then through vanes in a rotating inner cage. Particle fineness is controlled by the speed of the rotating cage assembly. Fine particles are discharged at more uniform flow rates to the burners through outlets at the top of the pulverizer. Oversized coal particles which do not penetrate the rotating cage fall into the reject cone and are returned concentrically to the grinding table.

Manual or automatic speed adjustment of the dynamic classifier is available. This speed control optimizes coal fineness as a function of pulverizer throughput. It also makes immediate accommodation of fuel changes possible. The SLS dynamic classifier provides superior sharpness of classification at all speeds.

Because fewer fine particles are returned to the table for regrinding, overgrinding is minimized, grinding power is reduced, and pulverizer throughput capability can increase. This improves combustion and lowers unburned carbon loss.

The SLS dynamic classifier is available as an upgrade replacement classifier for all vertical spindle pulverizer designs.



Bowl mill retrofit with DB Riley SLS (Dynamic) Classifier.

Hydraulic Roller Loading

- Optimum characterization of grinding loading versus pulverizer loading
- Instant adaptability to fuel changes
- Low-power starts
- Improved pulverizer accessibility

The DB Riley dynamic MPS Pulverizer is furnished with a hydraulic roller loading system. This provides optimum grinding force as a function of coal throughput, has the capability to change grinding force with fuel changes, and improves pulverizer response with changes in load demand.

The hydraulic roller loading system provides an automatic characterization of grinding force with coal feed rate and enables ratio and bias adjustments of the loading force. Grinding load is

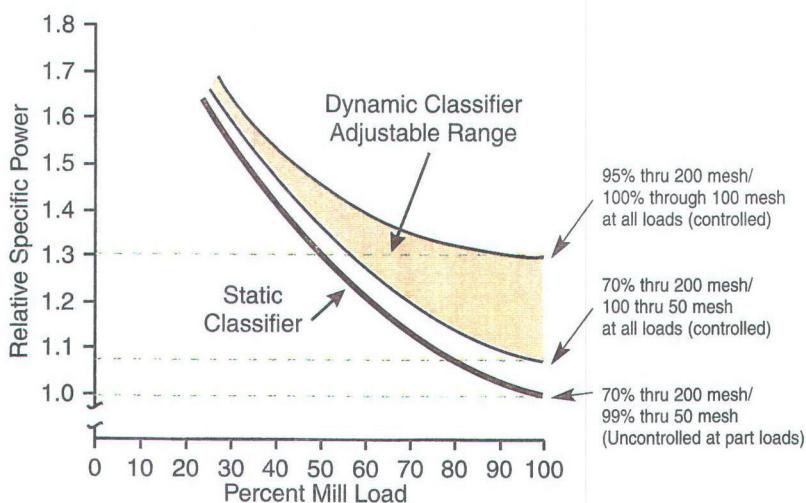
automatically adjusted as a function of pulverizer throughput. This provides optimum characterization of grinding load versus pulverizer load.

It is possible to adjust grinding load manually while the pulverizer is in operation. This provides instant adaptability to fuel changes, and provides improved pulverizer response to changes in load demand.

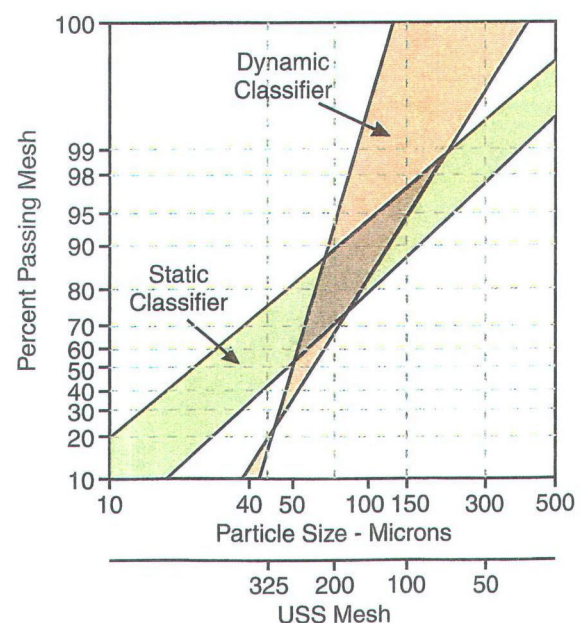
The hydraulic system will lift the grinding rollers off the grinding ring.

This prevents metal-to-metal contact of the pulverizer grinding parts during empty pulverizer start-up, and reduces the demand on the plant's electrical system during restart of a coal-laden pulverizer. Access to grinding components can be made without disassembly, making maintenance easier. Hydraulic loading makes unloading of a tripped pulverizer easier, discharge of tramp metal into the pyrite system safer, and extends the wear life of the pulverizer components.

**Specific Power Consumption Comparison
Dynamic vs. Static Classifier**



Particle Size Distribution



Planetary Gear Drive

- High reduction capability
- Compact enclosure
- Easier handling for maintenance

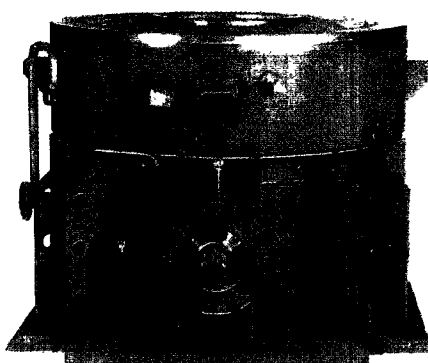
All DB Riley MPS Pulverizers are supplied with a planetary gear drive for high reduction capability in a compact enclosure. The planetary gear drive weighs less, costs less, and has a higher gearing efficiency than the triple reduction gearbox used on other pulverizers.

DB Riley's planetary gear drive has a small "footprint," which provides uniform load transmittal to the foundation. The mills occupy a smaller area, and mill aisle access is easier. Openings in the MPS pulverizer base housing allow removal of the gearbox without dismantling the pulverizer.

The drive motor is direct-coupled to the reducer. A spiral pinion bevel gear

on the input shaft meshes with a spiral bevel ring gear on the central lower vertical shaft. This in turn is coupled to an upper shaft with a "sun" gear meshing with three "planet" gears rotating within a stationary ring gear. The "planet" gears rotate the drive plate attached to the grinding table.

The drive is manufactured within the Babcock Borsig Power group, ensuring a dependable, single source supply for MPS world-class technology.



MPS Pulverizer

The SLK Static Classifier

Companion classifier to the mechanical spring loading pulverizer

While the static classifier contains no moving parts, excellent classification is provided by vane adjustment and operation techniques.

Pulverizer operation is dependable and the three stage classification provides efficient grinding with high fineness for complete combustion even with low-NO_x firing.

Mechanical Spring Roller Loading

DB Riley can furnish the MPS pulverizer with spring-loaded grinding rollers. This type of grinding loading can be used for certain locations and under specific circumstances where simplicity is desired.

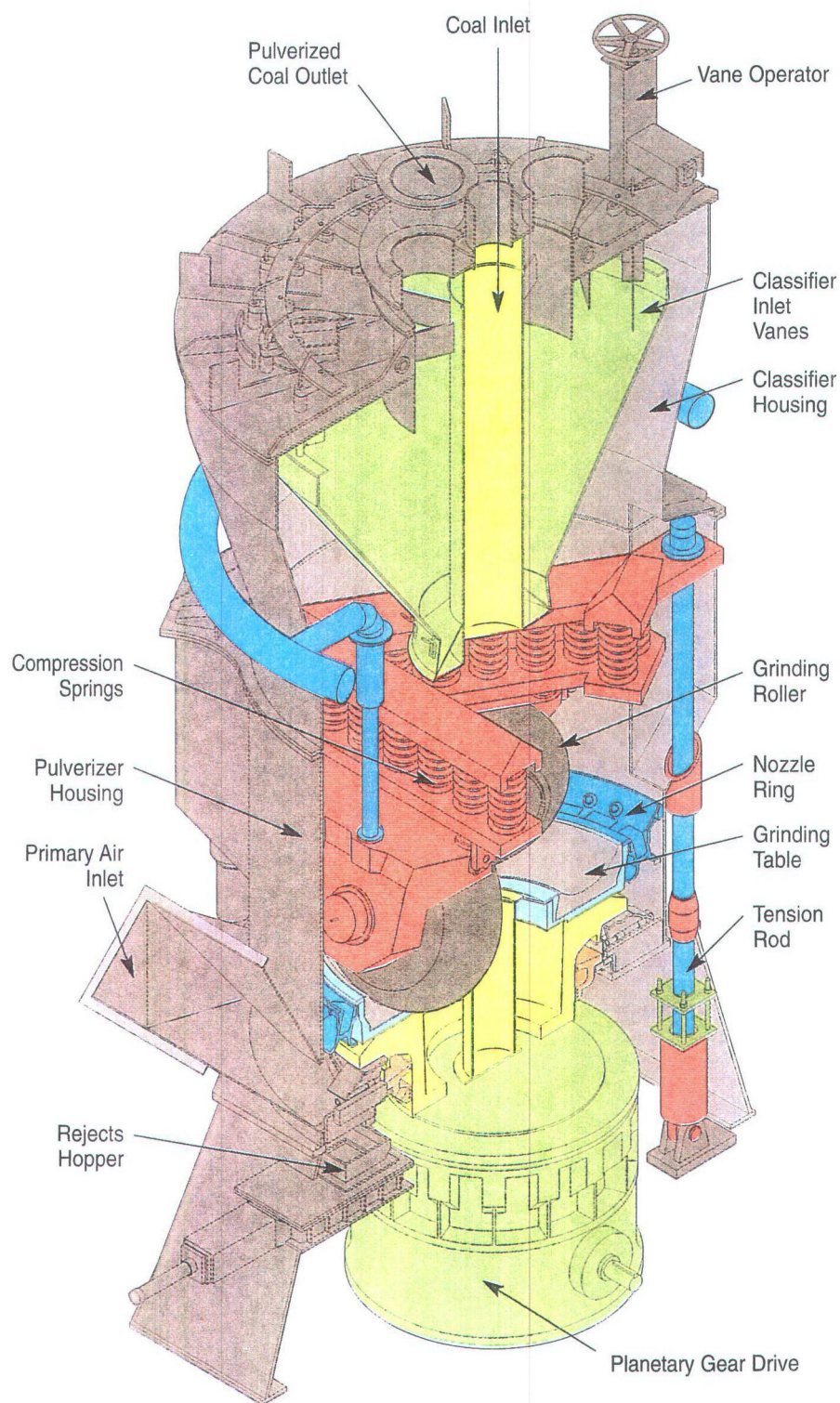
Pulverizer operation with mechanical spring roller loading is as dependable as hydraulic roller loading. This pulverizer uses the same planetary gear drive for savings in energy and dependability of operation. The springs provide an "umbrella of tension" to grind coals to fineness levels required for good combustion. You get the same world-class dependability and engineering you expect from DB Riley.

Compression springs are pre-loaded by the tension rods, coupled to external hydraulic loading cylinders. The loading cylinders are used only during adjustment of the spring loading. After adjustment, mechanical locks enable unloading of the cylinders and transfer of the tension loading directly to the pulverizer foundation.

Mill Size	Standard Throughput, lbs/hr*		Mill Size	Standard Throughput, lbs/hr*	
	With SLK Classifier	With SLS Classifier		With SLK Classifier	With SLS Classifier
32	924	989	180	77,791	83,236
40	1,785	1,910	190	88,566	97,766
50	3,305	3,536	200	102,097	109,244
63	5,560	5,949	212	117,351	125,566
72	7,878	8,429	225	136,474	146,027
80	10,133	10,842	235	151,446	162,047
90	14,048	15,031	245	167,359	179,074
100	18,042	19,305	255	185,998	199,018
112	23,664	25,320	265	205,009	219,360
125	31,292	33,482	280	235,502	251,987
140	41,628	44,542	290	259,495	227,660
150	50,367	53,893	300	281,343	301,037
160	58,715	62,825	315	318,038	340,301
170	67,861	72,611			

* HGI = 50; 70% thru 200 mesh

with SLK (Static) Classifier and Spring-loaded Rollers



MPS Pulverizer equipped with SLK (Static) Classifier and spring-loaded rollers

Call your nearest DB Riley sales office for more information on the MPS high-performance coal pulverizer. The world-class technology is available now for retrofit to pulverized coal-fired boilers of all manufacturers, and is an ideal solution to the combustion problems that can be associated with low-NO_x emissions.

See how your plant can benefit from the dependable world-class pulverizers available from DB Riley and our 80 years of experience in solving combustion and steam generating problems.

BABCOCK BORSIG POWER
DB RILEY

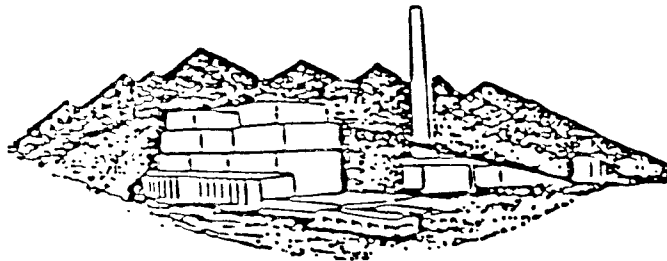
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Tel: (508) 852-7100 • Fax: (508) 852-7548
<http://www.dbriley.com>

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DBR-5 3M

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IP12_002801



INTERMOUNTAIN POWER SERVICE CORPORATION

CONFIRMATION: (435) 864-4414 EXT. 6577

FACSIMILE: (435) 864-6670

FACSIMILE COVER SHEET

DATE: April 23

TO: COMPANY NAME: Babeack Borsig
ATTENTION: Q lin
FACSIMILE #: 508-852-7548

FROM: Phil Hailes EXT: _____

DEPT: _____

PAGES TO FOLLOW: 4

COMMENTS: 1) Coal Data, Table Dimension, etc
2) Unit #1 Performance Data, Today
3) Unit #2 Performance Data, Today
4) Astoria Rotating Throat Test, 70-90%

DATE & TIME SENT: 4.23.02 Mon 2:55

CONFIRMATION BY: _____

APPROVED BY: _____

850 WEST BRUSHWELLMAN ROAD, DELTA, UT 84624-9546

IP12_002802

From: Phil Hailes
To: cpenterson@bbpwr.com; qlin@bbpwr.com
Date: 4/23/02 2:51PM
Subject: Pulverizer Data

Q Lin,

The following includes coal data as well as a brief explanation of a fax that I'm sending to you.

The following data represent a weighted average for the month of January. It should be considered representative of our coal.

Coal Data:

% Na2O 2.22
HGI 45.62
Softening Temp 2,194
HHVC Btu/lb 11,761
%H2O 8.06
%Ash 9.36
% Sulfur .57
% Volatile 34.07

The pulverizer differential pressure is measure at the air inlet duct and at the inlet to the classifier.

The MPS 89 table diameter is 118 inches.

I'll be faxing performance data that I pulled down today for both units (16 mills total). This is general operation data with mills roughly at 75% feeder speed.

I'm also including some data of a performance test that I ran on the Alstom rotating throats at 90% (70 % to 90%) feeder speed. It will show DP, PA Flow and PA Damper position.

I'll be out of the office for the rest of the week. You can call James Nelson if you have any questions.

Printed out for: PHIL-H

- 23-Apr-02 13:53:14

0 Messages U1 Pulv

U1 Pulv

Operating data

23-Apr-02 13:53:14

Unit 1	872.8 MW	^{stationary} Pulv A	^{stationary} Pulv B	^{Technomix Rotating} Pulv C	^{stationary} Pulv D	^{stationary} Pulv E	^{stationary} Pulv F	^{Alstom Rot. Throat} Pulv G	^{B&W Rotating} Pulv H
Coal Flow	347.9 TPH	51.0	51.4	0.0	52.0	44.6	51.1	51.7	51.9
Feeder Speed		73.5	75.7	0.0	76.2	65.9	74.7	74.7	75.4
Amps (Duct Pr)	43.6	61.2	62.0	0.0	68.7	58.5	47.7	51.9	70.2
Coal Pipe Vel		3852.	3956.	507.	3924.	4365.	4103.	4250.	4190.
PA Flow %		86.8	90.1	12.6	89.1	100.	92.8	96.1	94.9
PA Damper Pos %		79.2	81.2	1.0	68.8	86.7	74.7	78.4	76.5
Pulv Pitot DP		3.01	3.26	0.04	3.45	3.67	3.40	3.76	3.58
PA Mass Flow		3468.	3523.	508.	3533.	3902.	3658.	3789.	3742.
Pulv DP (NOx 0.45)		19.6	15.1	0.0	12.9	16.5	14.2	15.9	14.0
Air to Fuel Ratio		2.08	2.10	Calc	2.04	2.58	2.17	2.25	2.20
Pulv Inlet Temp		309.8	303.2	83.7	307.8	292.2	338.6	305.3	343.3
Pulv Outlet Temp		149.4	151.1	83.9	150.6	150.9	150.4	150.0	149.4
Coal Bias		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Air Bias		0.0	0.0	0.0	0.0	3.9	3.6	6.1	5.6
Hyd Skid Pr Fdbk		819.	2188.	947.	2182.	1943.	2247.	2147.	2150.
Hyd Skid Pr Setpt		2268.	2285.	1149.	2316.	2017.	2279.	2302.	2306.

EndTim= 23-Apr-02 13:53:14 /EvalTim= 23-Apr-02 13:53:14 /PanRate= 0

IP12_002804

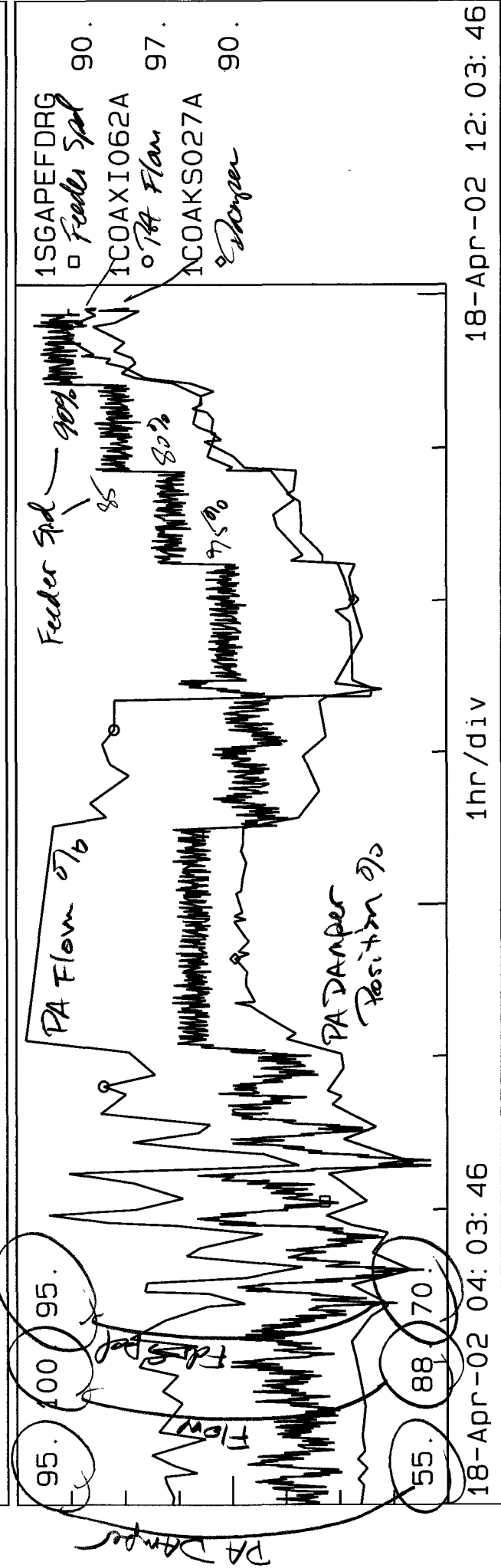
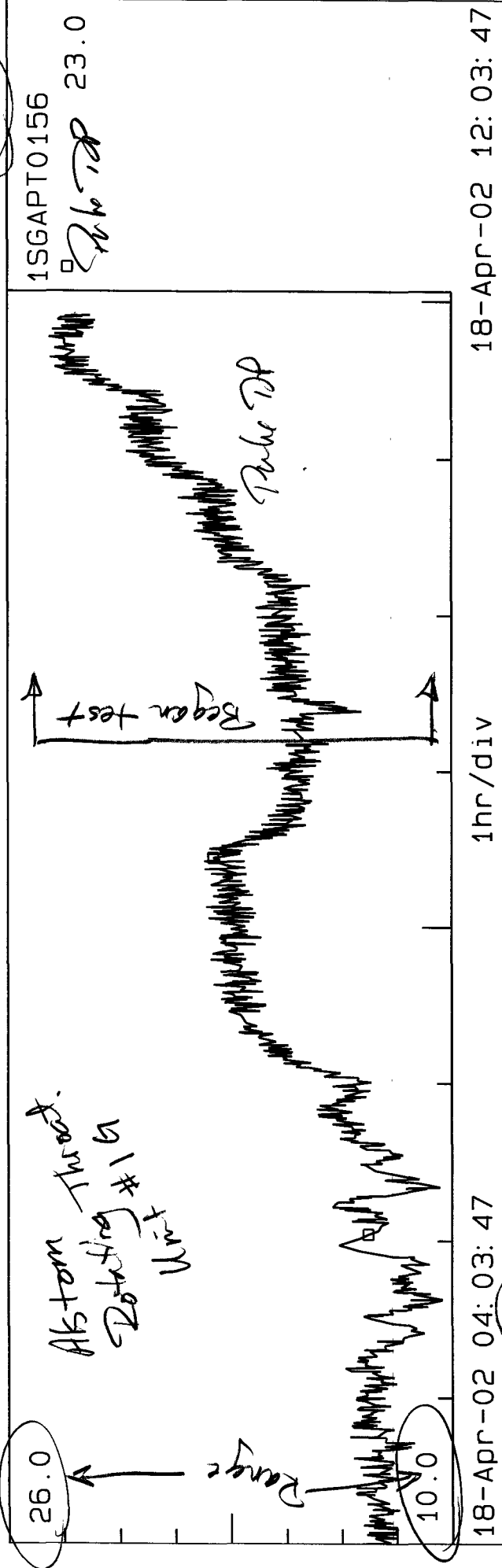
Printed out for: PHIL-H "H₂O" - 23-Apr-02 14:00:47

0 Messages U2 Pulv Operating data

23-Apr-02 14:00:47

Unit 2 875.5 MW	Stationary Station.		Technometrics Ret. Thrust		Station.		Station.	
	Pulv A	Pulv B	Pulv C	Pulv D	Pulv E	Pulv F	Pulv G	Pulv H
Coal Flow 342.4 TPH	48.3	49.6	44.1	50.2	50.9	48.6	50.4	Bad
Feeder Speed	71.3	73.3	64.1	70.8	72.0	70.6	72.4	Calc
Amps (Duct Pr 44.0)	64.0	57.9	54.4	58.8	71.9	56.0	65.5	0.0
Coal Pipe Vel	4076.	3955.	3871.	3679.	3967.	3894.	4072.	0.
PA Flow %	90.9	88.4	87.1	82.8	89.5	88.3	91.7	0.0
Duct Damper Pos %	76.3	67.8	66.7	73.6	67.4	75.7	71.1	16.0
Pulv Pitot DP	3.02	3.20	2.81	2.69	2.84	3.21	3.41	0.00
PA Mass Flow	3638.	3518.	3442.	3280.	3532.	3500.	3630.	0.
Pulv DP (NOx 0.43)	12.6	10.0	12.3	17.8	13.0	18.2	14.6	0.0
Air to Fuel Ratio	2.26	2.14	2.38	1.99	2.11	2.11	2.26	Calc
Pulv Inlet Temp	317.0	315.0	296.6	333.4	312.0	337.8	327.4	90.2
Pulv Outlet Temp	150.9	152.2	150.3	150.1	151.4	149.1	150.1	85.1
Coal Bias	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Air Bias	0.0	0.0	2.5	0.0	0.0	0.0	2.7	0.0
Hyd Skid Pr Fdbk	2144.	2158.	1903.	1929.	2464.	2149.	2165.	0.
Hyd Skid Pr Setpt	2175.	2222.	2021.	2235.	2277.	2187.	2252.	1149.

EndTim= 23-Apr-02 14:00:47 / EvalTim= 23-Apr-02 14:00:47 / PanRate= 0



Alstom
Throat
Test Apr, 02

Intermountain Generating Station
Pulverizer Fineness Results

Test#	1	2	3	4	5
Date Tested	4/18/02	4/18/02	4/18/02	4/18/02	4/18/02
Unit	1	1	1	1	1
Mill	G	G	G	G	G
% Feeder Speed	75.00	80.00	85.00	90.00	95.00
Actual % Through 200 Mesh					67.8
Expected % Through 200 Mesh					59.56
HGI					41.7
Total Moisture					6.25
Air Dry Loss					4.64
As Received Btu					12154

Test Period Average Data

Test		1	2	3	4	5
Unit Pulv		1G	1G	1G	1G	1G
% Feeder Speed	1SGAPEFDRG	75.56	80.61	85.59	90.65	95.62
Actual Pulv Coal Flow (tph)	1COAXI008A	51.39	54.82	58.22	61.66	65.01
PA Damper Position (%)	1COAKS027A	75.59	78.24	83.60	90.38	99.14
PA Flow (%)	1COAXI062A	90.63	92.44	94.77	97.18	95.21
PA Inlet Damper Temp (DEGF)	1SGATE0645	324.24	330.85	344.86	374.78	405.51
PA D/P (INWC)	1SGAPT0156	16.05	18.05	20.86	23.34	24.95
Disch Temp (DEGF)	1COAXI070A	150.49	150.40	150.41	150.41	150.30
Pulv Motor (amps)	1SGAKK0007	51.76	52.69	53.86	54.71	55.87
Pulv Pitot Tube DP (INWC)	1COAXI241G	3.43	3.63	3.88	4.24	4.22
PA Mass Flowrate (lb/min)	1SGBPE0062	3605	3641	3674	3740	3786
Pulv 30K overhaul hrs	1SGATZ011C	2417	2418	2418	2420	2421
Pulv H amp swing	1SGAPE1007	4.87	5.42	6.16	6.21	6.54
PA Duct Pressure (INWC)	1COAXI072A	43.70	43.65	43.71	43.75	43.90
PA Bias	1COAXI217A	0.00	0.00	0.00	0.00	0.00
Fuel to Air Ratio	1SGBPE062R	2.08	2.00	1.94	1.87	1.74
Var Loading Skid Fdbk	1SGAPT0285	2307	2306	2306	2305	2303
Skid Press Setpoint	1COAXI237A	2289	2397	2400	2400	2400

* Contract % Through 200 Mesh	70	70	70	70	70
HGI Correction	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.834
Moisture Correction	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.994
Fineness Correction	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1.158
Expected % Through 200 Mesh (Good @ 65 tph only)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	59.56
Actual % Through 200 Mesh					67.80
Difference	#VALUE!	#VALUE!	#VALUE!	#VALUE!	8.24
Ratio	#VALUE!	#VALUE!	#VALUE!	#VALUE!	113.83
% Retained on 30 & 50 Mesh					0.10
Actual % Through 50 Mesh					99.90
Actual % Through 100 Mesh					95.40

*Contract coal - 48 HGI and air dry loss < 4%.

Expected is found from fineness correction vs % through 200 mesh graph.

Fineness Correction	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1.158493
Expected	#VALUE!	#VALUE!	#VALUE!	#VALUE!	59.56

IP12_002807

→ cpenterson@bbpwr.com.

Babcock-Borrig

Rotating Throats.

Craig Penterson X4086.

QLin@BBPwr.com

Qing Sheng Lin.

508-854-3822.

April 8, 2002

Craig Penterson

Brian Kennedy

Bob Thayer X 3758

1) Fuel Analysis

Carton, Ash

2) PA Fan testing Report.

James has a curve

3) Rotating / Stationary June 15, 1998.

Blow Report.

4) Mill drawing of connections
for Rotating throats.
Dimension.

5) Fuel-flow rate 65 tons/hr. full load?

6) Turn-down rate for fuel?

→ 7) "Design Performance" sheet for WPS-89.

8) Mill Pressure drop? 14 in $\frac{1}{2}$ O.

① Full-load?

All operating information.

9) Pressure (AP) Transducer location?

Method of attaching the Technomics.
MPS & comparable in 225 centimeters.

Diameter of grinding Table.

- Fixed vs. Rotary throat performance data.

- P4 for testing - capacity,
or

- Pulverizer MP measurement location - 21"
where is it?

95% Fdr Spd.

1C Pulverizer Oversize Throat Test.

4 hr Summary

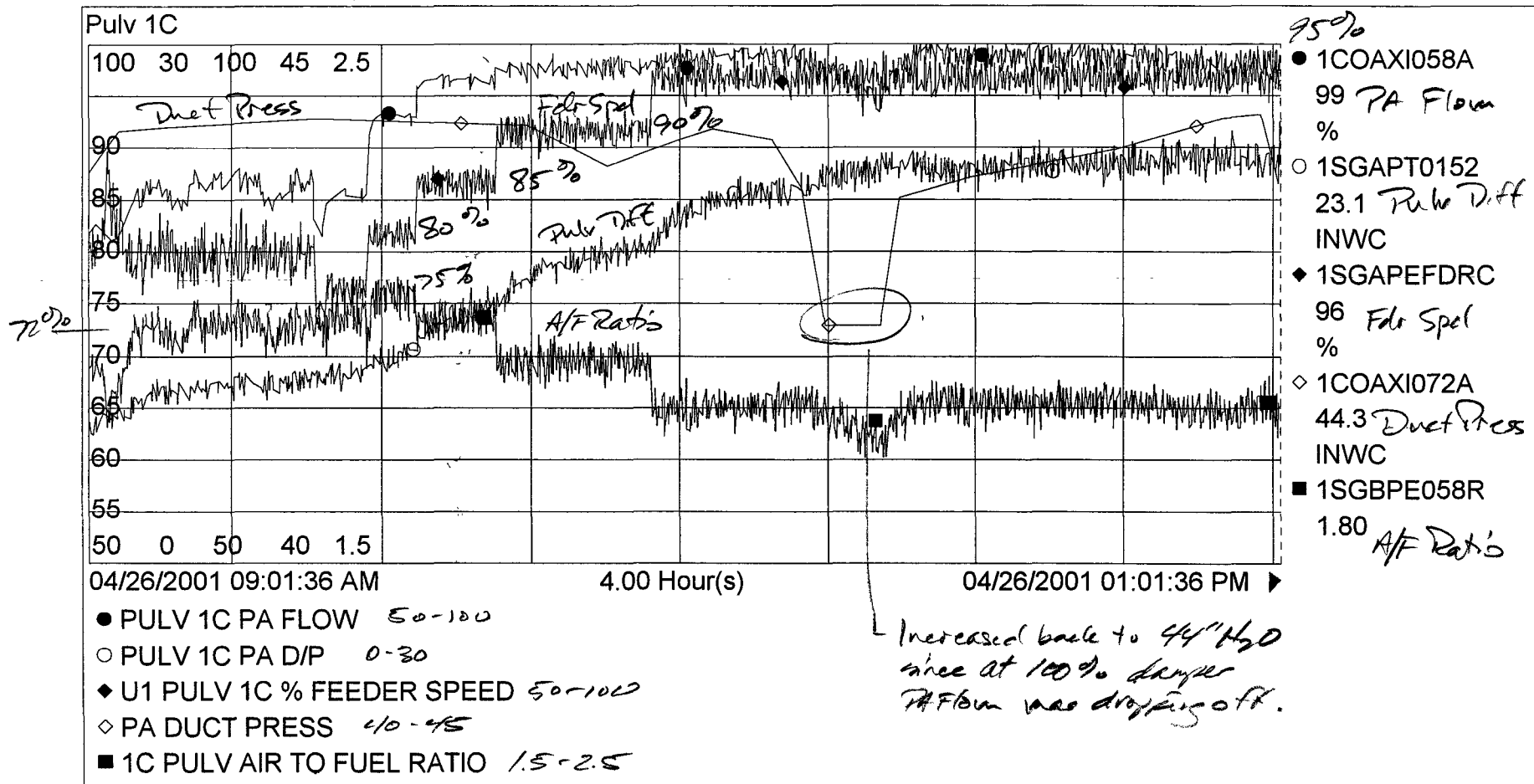
Fdr Spd. 75% to 95%

A/F Ratio 1.8

Pulv DP stable at 23" H₂O

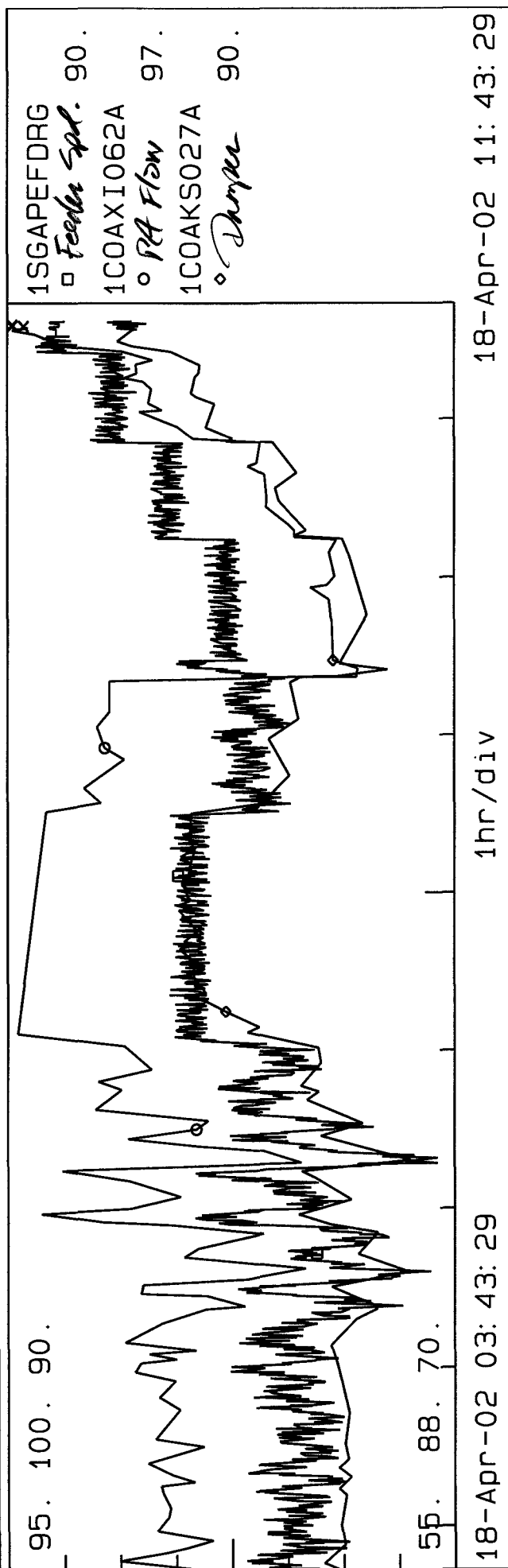
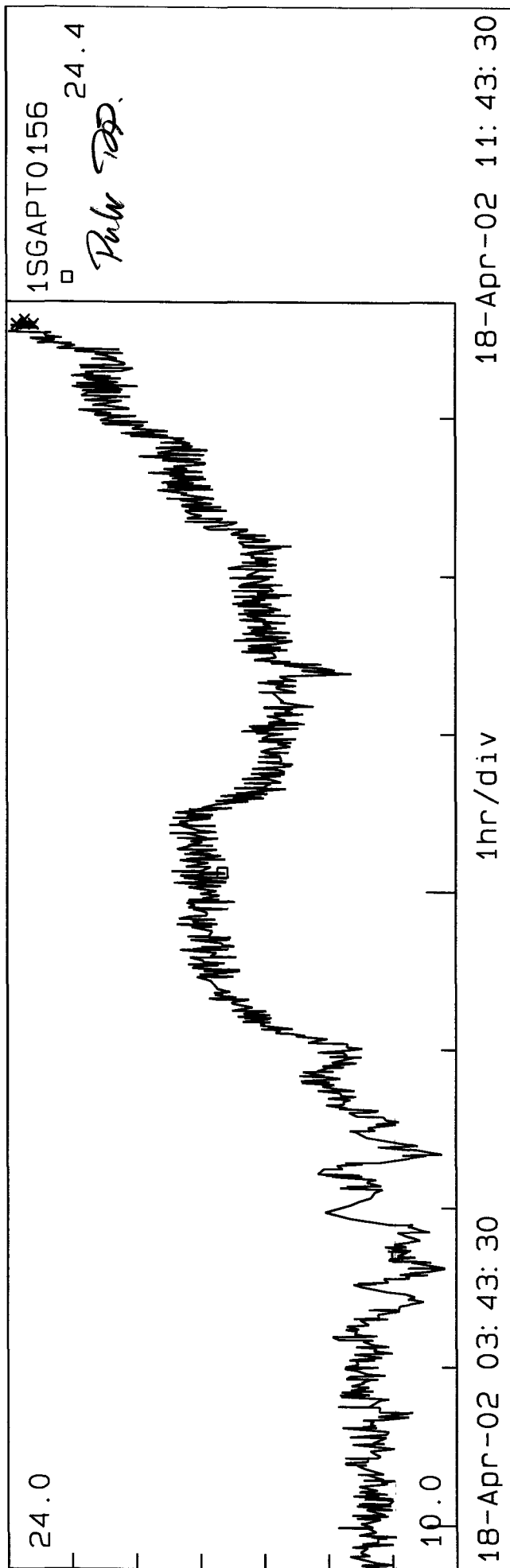
Duct Press @ 44" H₂O

? 72 Amps @ 95% Approx?



1) kills on-line.

18-Apr-02 11:36:49



Intermountain Generating Station
Pulverizer Fineness Results

Test#	1	2	3	4	5
Date Tested	4/18/02	4/18/02	4/18/02	4/18/02	4/18/02
Unit	1	1	1	1	1
Mill	G	G	G	G	G
% Feeder Speed	75.00	80.00	85.00	90.00	95.00
Actual % Through 200 Mesh					
Expected % Through 200 Mesh					
HGI					
Total Moisture					
Air Dry Loss					
As Received Btu					

Test Period Average Data

Test		1	2	3	4	5
Unit Pulv		1G	1G	1G	1G	1G
% Feeder Speed	1SGAPEFDRG	75.56	80.61	85.59	90.65	95.62
Actual Pulv Coal Flow (tph)	1COAXI008A	51.39	54.82	58.22	61.66	65.01
PA Damper Position (%)	1COAKS027A	75.59	78.24	83.60	90.38	99.14
PA Flow (%)	1COAXI062A	90.63	92.44	94.77	97.18	95.21
PA Inlet Damper Temp (DEGF)	1SGATE0645	324.24	330.85	344.86	374.78	405.51
PA D/P (INWC)	1SGAPT0156	16.05	18.05	20.86	23.34	24.95
Disch Temp (DEGF)	1COAXI070A	150.49	150.40	150.41	150.41	150.30
Pulv Motor (amps)	1SGAKK0007	51.76	52.69	53.86	54.71	55.87
Pulv Pitot Tube DP (INWC)	1COAXI241G	3.43	3.63	3.88	4.24	4.22
PA Mass Flowrate (lb/min)	1SGBPE0062	3605	3641	3674	3740	3786
Pulv 30K overhaul hrs	1SGATZ011C	2417	2418	2418	2420	2421
Pulv H amp swing	1SGAPE1007	4.87	5.42	6.16	6.21	6.54
PA Duct Pressure (INWC)	1COAXI072A	43.70	43.65	43.71	43.75	43.90
PA Bias	1COAXI217A	0.00	0.00	0.00	0.00	0.00
Fuel to Air Ratio	1SGBPE062R	2.08	2.00	1.94	1.87	1.74
Var Loading Skid Fdbk	1SGAPT0285	2307	2306	2306	2305	2303
Skid Press Setpoint	1COAXI237A	2289	2397	2400	2400	2400

* Contract % Through 200 Mesh	70	70	70	70	70
HGI Correction	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.000
Moisture Correction	#VALUE!	#VALUE!	#VALUE!	#VALUE!	1.040
Fineness Correction	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#DIV/0!
Expected % Through 200 Mesh (Good @ 65 tph only)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#DIV/0!
Actual % Through 200 Mesh					
Difference	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Ratio	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
% Retained on 30 & 50 Mesh					
Actual % Through 50 Mesh					
Actual % Through 100 Mesh					

*Contract coal - 48 HGI and air dry loss < 4%.

Expected is found from fineness correction vs % through 200 mesh graph.

Fineness Correction	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#DIV/0!
Expected	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#DIV/0!

IP12_002812

AS FIRED COAL SAMPLE ANALYSES - IPSC FUELS LAB

<u>Lab #</u>	<u>Date</u>	<u>Time</u>	<u>Moist%</u>	<u>Ash%</u>	<u>S%</u>	<u>Btu/lb</u>	<u>Res Mois%</u>	<u>C%</u>	<u>H%</u>	<u>N%</u>
30171	3/1/2002	17:00	7.06	10.80	0.69	11857	0.96	66.25	4.58	1.41
30174	3/2/2002	17:00	7.70	9.31	0.58	11924	1.51	67.24	4.59	1.20
30176	3/3/2002	17:00	6.25	9.55	0.58	12064	1.43	67.66	4.66	1.25
30182	3/4/2002	17:00	6.56	9.78	0.48	11896	1.58	66.13	4.61	1.19
30186	3/5/2002	17:00	6.43	9.50	0.46	11919	1.60	67.01	4.57	1.15
30188	3/6/2002	17:00	6.13	9.82	0.47	11932	1.70	66.84	4.58	1.17
	3/7/2002									
	3/8/2002									
	3/9/2002									
	3/10/2002									
	3/11/2002									
	3/12/2002									
	3/13/2002									
30223	3/14/2002	17:00	7.07	10.11	0.53	11810	1.43	66.71	4.76	1.20
30227	3/15/2002	17:00	7.15	9.84	0.65	11958	1.31	66.87	4.66	1.23
30228	3/16/2002	17:00	6.26	10.16	0.67	12092	1.30	67.67	4.69	1.27
30229	3/17/2002	17:00	6.63	11.29	0.61	11834	1.23	66.06	4.54	1.25
30322	3/18/2002	17:00	7.18	11.73	0.52	11608	1.47	64.92	4.47	1.18
30238	3/19/2002	17:00	6.68	11.44	0.57	11733	1.57	65.94	4.61	1.23
30241	3/20/2002	17:00	5.81	10.67	0.51	11896	1.49	66.81	4.62	1.27
30246	3/21/2002	17:00	5.93	10.67	0.51	11915	1.84	66.72	4.66	1.23
30249	3/22/2002	17:00	5.95	10.22	0.52	11959	1.49	67.10	4.69	1.20
30251	3/23/2002	16:30	5.15	11.31	0.61	11983	1.36	66.82	4.54	1.29
30253	3/24/2002	17:00	6.19	9.61	0.56	12201	1.33	67.63	4.69	1.28
30256	3/25/2002	17:00	7.02	10.17	0.56	11897	1.75	66.70	4.65	1.23
30267	3/26/2002	17:00	6.46	9.89	0.48	11936	1.79	67.02	4.73	1.21
30270	3/27/2002	17:00	5.77	11.40	0.57	11945	1.37	66.22	4.58	1.25
30276	3/28/2002	17:00	7.08	9.00	0.50	12001	1.63	67.24	4.63	1.19
30283	3/29/2002	17:00	6.66	10.45	0.59	11904	1.40	66.18	4.66	1.22
30286	3/30/2002	17:00	6.26	10.52	0.62	11978	1.43	66.71	4.57	1.29
30287	3/31/2002	17:15	6.24	10.85	0.64	11872	1.39	67.08	4.59	1.25

AS FIRED COAL SAMPLE ANALYSES - IPSC FUELS LAB

<u>Lab #</u>	<u>Date</u>	<u>O%</u>
30171	3/1/2002	9.21
30174	3/2/2002	9.38
30176	3/3/2002	10.05
30182	3/4/2002	11.25
30186	3/5/2002	10.88
30188	3/6/2002	10.99
	3/7/2002	-
	3/8/2002	-
	3/9/2002	-
	3/10/2002	-
	3/11/2002	-
	3/12/2002	-
	3/13/2002	-
30223	3/14/2002	9.62
30227	3/15/2002	9.60
30228	3/16/2002	9.28
30229	3/17/2002	9.62
30322	3/18/2002	10.00
30238	3/19/2002	9.53
30241	3/20/2002	10.31
30246	3/21/2002	10.28
30249	3/22/2002	10.32
30251	3/23/2002	10.28
30253	3/24/2002	10.04
30256	3/25/2002	9.67
30267	3/26/2002	10.21
30270	3/27/2002	10.21
30276	3/28/2002	10.36
30283	3/29/2002	10.24
30286	3/30/2002	10.03
30287	3/31/2002	9.35

AS FIRED COAL SAMPLE ANALYSES - IPSC FUELS LAB

<u>Lab #</u>	<u>Date</u>	Dry <u>Ash%</u>	Dry <u>S%</u>	Dry <u>C%</u>	Dry <u>H%</u>	Dry <u>N%</u>	Dry <u>O%</u>	Dry <u>Btu/lb</u>	<u>MAF BTU</u>
30171	3/1/2002	11.62	0.74	71.28	4.93	1.52	9.91	12758	14435
30174	3/2/2002	10.09	0.63	72.85	4.97	1.30	10.16	12919	14368
30176	3/3/2002	10.19	0.62	72.17	4.97	1.33	10.72	12868	14328
30182	3/4/2002	10.47	0.51	70.77	4.93	1.27	12.04	12731	14219
30186	3/5/2002	10.15	0.49	71.61	4.88	1.23	11.63	12738	14177
30188	3/6/2002	10.46	0.50	71.20	4.88	1.25	11.71	12711	14196
	3/7/2002	-	-	-	-	-	-	-	-
	3/8/2002	-	-	-	-	-	-	-	-
	3/9/2002	-	-	-	-	-	-	-	-
	3/10/2002	-	-	-	-	-	-	-	-
	3/11/2002	-	-	-	-	-	-	-	-
	3/12/2002	-	-	-	-	-	-	-	-
	3/13/2002	-	-	-	-	-	-	-	-
30223	3/14/2002	10.88	0.57	71.79	5.12	1.29	10.35	12708	14260
30227	3/15/2002	10.60	0.70	72.02	5.02	1.32	10.34	12879	14405
30228	3/16/2002	10.84	0.71	72.19	5.00	1.35	9.90	12900	14468
30229	3/17/2002	12.09	0.65	70.75	4.86	1.34	10.30	12674	14418
30322	3/18/2002	12.64	0.56	69.94	4.82	1.27	10.77	12506	14315
30238	3/19/2002	12.26	0.61	70.66	4.94	1.32	10.21	12573	14330
30241	3/20/2002	11.33	0.54	70.93	4.90	1.35	10.95	12630	14243
30246	3/21/2002	11.34	0.54	70.93	4.95	1.31	10.93	12666	14287
30249	3/22/2002	10.87	0.55	71.35	4.99	1.28	10.97	12716	14266
30251	3/23/2002	11.92	0.64	70.45	4.79	1.36	10.84	12634	14344
30253	3/24/2002	10.24	0.60	72.09	5.00	1.36	10.70	13006	14490
30256	3/25/2002	10.94	0.60	71.74	5.00	1.32	10.40	12795	14367
30267	3/26/2002	10.57	0.51	71.65	5.06	1.29	10.92	12760	14269
30270	3/27/2002	12.10	0.60	70.27	4.86	1.33	10.84	12676	14421
30276	3/28/2002	9.69	0.54	72.36	4.98	1.28	11.15	12915	14301
30283	3/29/2002	11.20	0.63	70.90	4.99	1.31	10.97	12753	14361
30286	3/30/2002	11.22	0.66	71.16	4.88	1.38	10.70	12778	14393
30287	3/31/2002	11.57	0.68	71.54	4.90	1.33	9.97	12662	14319

[illegible]

INTERMOUNTAIN GENERATING STATION - DAILY COAL BURNS

Mar-02					
	UNIT 1			UNIT 2	
	BURN			BURN	
DATE	(TONS)	(POUNDS)		(TONS)	(POUNDS)
1-Mar-02	7723	15,446,000		6970	13,940,000
2-Mar-02	7932	15,864,000		0	0
3-Mar-02	7906	15,812,000		0	0
4-Mar-02	7847	15,694,000		0	0
5-Mar-02	7884	15,768,000		0	0
6-Mar-02	7886	15,772,000		0	0
7-Mar-02	7848	15,696,000		0	0
8-Mar-02	7943	15,886,000		0	0
9-Mar-02	7978	15,956,000		0	0
10-Mar-02	7969	15,938,000		0	0
11-Mar-02	8212	16,424,000		0	0
12-Mar-02	8281	16,562,000		0	0
13-Mar-02	8001	16,002,000		0	0
14-Mar-02	7961	15,922,000		0	0
15-Mar-02	7841	15,682,000		0	0
16-Mar-02	7907	15,814,000		0	0
17-Mar-02	7615	15,230,000		0	0
18-Mar-02	7999	15,998,000		0	0
19-Mar-02	8014	16,028,000		0	0
20-Mar-02	7984	15,968,000		0	0
21-Mar-02	8045	16,090,000		0	0
22-Mar-02	8145	16,290,000		0	0
23-Mar-02	4942	9,884,000		0	0
24-Mar-02	5309	10,618,000		0	0
25-Mar-02	7971	15,942,000		0	0
26-Mar-02	8074	16,148,000		0	0
27-Mar-02	8125	16,250,000		0	0
28-Mar-02	8214	16,428,000		0	0
29-Mar-02	8055	16,110,000		0	0
30-Mar-02	8084	16,168,000		65	130,000
31-Mar-02	7849	15,698,000		1137	2,274,000
TOTAL	241,544	483,088,000		8,172	16,344,000

**AS RECEIVED TRUCK DATA
IPSC FUELS LAB**

55209.7152	52014.2976	2130.2784	67624504.32	11598.1824	57366.60152	2349.485387	74583108.33	82589770.79
76733.845	72901.23	3098.71	92830828	16635.18	80473.81609	3420.587261	102473593.1	113693604.4
68696.0412	65563.56	2768.2392	82857770.16	15589.5576	72389.93044	3056.46373	91484785.43	101578730.1
6086.994	6695.6934	276.0381	8160110.91	1500.5148	7325.703939	302.0110503	8927911.28	9958641.579
70969.28	68862.72	2760.32	81611040	15327.04	76319.09564	3059.204256	90447788.98	101066303.4
88682.3243	79735.9194	3300.6154	97845874.95	23364.8827	88802.67224	3675.927609	108971906.6	121381807.4
85741.2116	83201.38	3415.6356	98063773.88	27412.6652	92230.77264	3786.315929	108706101.2	121501392.5
79246.7424	80429.5296	3125.9376	94960915.2	24923.016	88754.72258	3449.500772	104790239.7	117091140.8
71093.6928	69422.6872	2810.3276	85707396.32	20052.0672	76591.66726	3100.537952	94558027.71	105162449.5
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0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
602459.8465	578827.0172	23686.1019	709662213.7	156403.1059	640254.9823	26200.03395	784943462.3	874023840.5

IP12_002818

AS RECEIVED TRUCK DATA
IPSC FUELS LAB

[illegible]

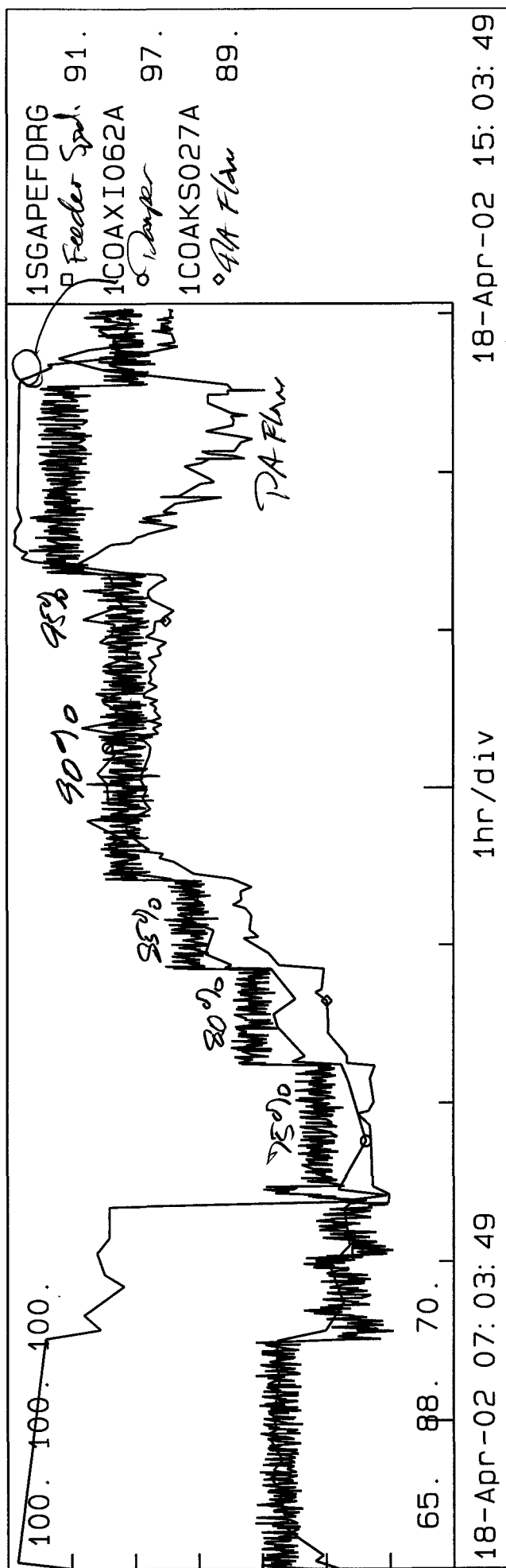
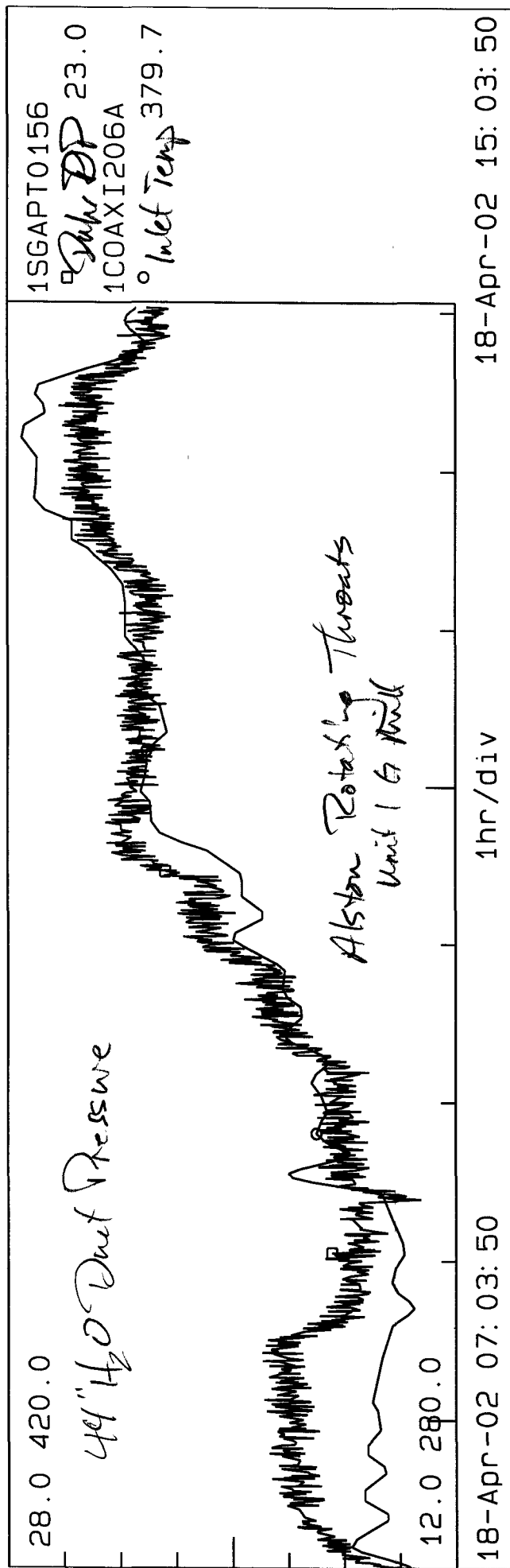
IP12_002819

Jan-02

Weighted Totals

<u>Mine</u>	sampled	% of Total	% Na2O	HGI	Softening	HHVC Btu/lb	% H2O	% Ash	% Volatile	% Fixed Carbon	% Sulfur
	Total Tonnage				Temp						
Genwall Resources	55,929.59	11.85	2.14	47.2	2,109	12,536	7.61	7.09	36.57	48.73	0.54
Skyline (Product B) trucks	0.00	0.00	0.97	43.7	2,137	12,562	5.51	6.51	43.20	44.78	0.40
SUFCO Truck Coal	0.00	0.00	3.28	45.5	2,112	11,418	8.98	9.28	34.48	47.26	0.40
SUFCO	184,305.49	39.06	3.74	46.7	2,103	11,431	9.67	8.95	33.87	47.51	0.39
Andalex	27,928.56	5.92	0.56	44.4	2,346	11,632	7.86	10.25	33.93	47.97	0.45
West Ridge Resources	36,099.20	7.65	0.83	48.0	2,277	12,877	6.44	6.24	33.55	53.77	1.08
Willow Creek Contract	0.00	0.00	0.48	46.0	2,220	12,314					
Arch-Dugout (spot)	129,885.18	27.53	1.31	43.9	2,258	11,640	6.95	10.76	33.62	48.67	0.65
Arch-Dugout	18,851.20	4.00	0.63	41.7	2,357	11,720	6.14	12.38	33.05	48.43	0.76
Arch (option B)	18,803.30	3.99	0.56	43.5	2,357	11,627	6.70	12.20	33.94	47.16	0.79
Totals	471,802.52	100.00	2.22	45.62	2,194	11,761	8.06	9.36	34.07	48.50	0.57

IP12_002820



Printed out for: UNIT10P

- 18-Apr-02 13: 34: 44

0 Messages U1 Pulv

U1 Pulv Operating data

18-Apr-02 13: 34: 44

Unit 1 874.8MW	Pulv A	Pulv B	Pulv C	Pulv D	Pulv E	Pulv F	Pulv G	Pulv H
Coal Flow364.0TPH	49.5	49.9	0.0	50.4	49.3	50.0	65.1	48.9
Feeder Speed	72.4	74.1	0.0	75.3	73.7	74.5	95.3	73.0
Amps (Duct Pr43.9)	58.2	63.5	0.0	61.4	63.9	46.5	55.7	65.2
Coal Pipe Vel	4001.	3948.	452.	3935.	3955.	3929.	4328.	4339.
PA Flow %	89.8	88.9	11.3	88.5	91.5	88.3	96.8	97.4
PA Damper Pos	72.1	78.7	1.0	68.7	82.0	70.2	99.0	76.6
Pulv Pitot DP	3.28	3.26	0.03	3.44	3.18	3.16	4.33	3.94
PA Mass Flow	3571.	3518.	460.	3505.	3526.	3500.	3847.	3866.
Pulv DP (NOx 0.45)	13.9	13.8	0.0	14.5	16.3	13.2	24.4	13.3
Air to Fuel Ratio	2.17	2.11	Calc	2.07	2.12	2.10	1.76	2.37
Pulv Inlet Temp	321.6	316.9	78.2	317.4	341.2	360.5	400.1	370.6
Pulv Outlet Temp	148.9	151.1	81.3	150.6	149.7	150.0	150.1	150.0
Coal Bias	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.1
Air Bias	0.0	0.0	0.0	0.0	3.6	0.0	0.0	9.7
Hyd Skid Pr Fdbk	2054.	2262.	955.	995.	2168.	2293.	2306.	2140.
Hyd Skid Pr Setpt	2221.	2235.	1149.	2261.	2194.	2237.	2400.	2202.

EndTim= 18-Apr-02 13: 34: 44 /EvalTim= 18-Apr-02 13: 34: 44 /PanRate= 0

IP12_002822

BABCOCK BORSIG POWER

July 23, 2002

Intermountain Power Service Corp.
850 W. Brush Wellman Road
Delta, UT 84624-9546

ATTN: Mr. James Nelson

RE: Rotary Throat Retrofit Project
BBPI Proposal No. 501103 Rev. 2

Dear Mr. Nelson:

In accordance with your request, and subsequent telephone conversations with your Mr. Phil Hailes, we are pleased to submit, for your consideration, two (2) copies of our proposal 501103, Rev. 2 to retrofit a state-of-the-art Babcock Borsig Power rotating throat assembly to your existing MPS 89G pulverizer, designated 1B.

Our proposal to provide the necessary engineering, conversion kit materials, and field supervision to accomplish this retrofit was previously presented in two phases. Phase I test components fabricated from plain carbon steel and Phase II final design components fabricated from special wear resistant materials. Per your most recent request, we will now waive Phase I and provide one (1) rotary throat assembly cast from carbon steel material with special nozzle contour, as generally shown on drawing FED 071902-00. The throat assembly will be supplied in (12) segments to be bolted and welded in place by IP. Performance testing will be performed by IP and witnessed by BBPI. Also, since mill 1B employs a stationary throat, BBPI will provide necessary detail drawing(s) for IP to fabricate a new mating flange assembly necessary for conversion to rotary throat.

Our objective is to improve existing mill performance focusing on the following criterion guidelines:

- 6% IPH (95% feeder speed) mill throughput
- Classifier fineness of 73% \pm thru 200 mesh
- Pressure differential not greater than 21" iwc between primary air inlet and classifier inlet (does not include classifier dP)
- Classifier 44" duct pressure
- Power consumption less than or equal to 70 amps of main motor
- Air intake reject rate

Babcock Borsig Power, Inc.
Energy Systems and Services Division

Mailing Address

Post Office Box 15040
Worcester, MA 01615-0040

Shipping Address

5 Neponset Street
Worcester, MA 01606

Telephone: (508) 852-7100
Fax: (508) 852-7548

www.bbpwr.com

IP12_002823

Pre and post retrofit mill baseline data will be provided by IP to develop a quantitative comparison of performance. If mill performance improvements are demonstrated to the satisfaction of IP, BBPI will invoice IP the cost of the retrofit program as follows:

- Field trip by (2) BBPI fuel burning engineers to obtain operational data, dimensions and arrangement drawings of the subject retrofit MPS 89G mill. IP will provide or assist BBPI to collect/verify relevant existing mill dimensions and drawings, which may include to open and prepare the mill for inspection and table measurements. The mill selected should be the one intended to receive the new rotating throat. (This phase of the retrofit program is complete.)
- Preparation of cast rotating throat retrofit kit drawings, including mating flange adaptor drawings.
- One (1) set of multiple rotating throat bolted/welded segments cast from carbon steel will be provided with associated bolting hardware, seals, fabricated ledge cover and ring, including recommended field welding procedures to install (12) adjacent radial segments together.
- One (1) service engineer for (6) days [(2) days to witness baseline testing, (2) days to advise and consult during field assembly, and (2) days to witness final performance testing.] Per diem optional

Price for cast rotary throat assembly made from carbon steel is:

\$25,500 (\$23,000 material plus \$2,500 witness testing)

Optional price for cast rotary throat assembly made from wear resistant material is:

\$29,000 (\$26,500 material plus \$2,500 witness testing)

All pricing F.O.B. Delta, Utah.

The program schedule for the cast rotary throat assembly will be as follows:

• Drawing Preparation	.....	2-3 Weeks
• Drawing Review and Approval	.....	1-2 Weeks
• Pattern Development	.....	3-4 Weeks
• Casting	.....	9-12 Weeks
• Delivery	.....	1 Week
• Installation	.....	1 Week
Total Estimated Phase II Program	.....	17-23 Weeks

Intermountain Power Service Corp.

July 23, 2002

Page 3

The BBPI rotary throat design directly impacts mill performance, such as mill pressure differential, primary air and coal distribution in the grinding zone, and pre-classification of pulverized coal. Babcock Borsig Power has conducted throat optimization studies to achieve enhancement in throat performance with lower pressure drop and better primary air and coal distribution. Currently, it is our engineering standard design to provide rotating throats with all new MPS mills. The rotating throat distributes primary air and coal flows more evenly and minimizes the impact of throat wear by producing more uniform wear on the throat. We are offering a BBPI standard proven stationary throat nozzle design, which very closely resembles IP's preference, based on extensive research and experimentation with other manufacturers. Also, BBPI will perform CFD modeling and share results and computational data with IP, for no extra charge.

Our standard "Short Form Materials" Terms and Conditions have been attached for your consideration, as well as service per diem terms and rates for out of scope days.

In anticipation of your authorization to proceed, we have completed the required field inspection and initiated drawing preparation. Mating flange adaptor drawings will be submitted within (2) weeks after award of an order.

If you have any questions, please do not hesitate to contact us. Our Mr. Tom Martinko will be contacting you subsequently to entertain any questions you may have regarding our proposal.

Thank you for your continued interest in Babcock Borsig Power, world-class leaders in coal size reduction technology.

Very truly yours,

Babcock Borsig Power, Inc.



Robert V. Faia

National Director of Business Development
Services Division

RVF/pjh

cc: B. Leblanc T. Martinko
C. Penterson K. Davis
K. Toupin B. Kennedy
Q. Lin

IP12_002825

Babcock Borsig Power, Inc.
TERMS AND CONDITIONS - MATERIALS
(SHORT FORM)

1.0 GENERAL

Babcock Borsig Power, Inc. hereinafter called "Company" shall perform, and the Purchaser agrees to purchase, the proposed equipment ("equipment") in accordance with the terms and conditions contained herein.

2.0 PRICE AND TERMS OF PAYMENT

The price is as specified in the Company's proposal or quotation. Unless otherwise agreed, the price shall be valid only for sixty (60) days from the date submitted and terms of payment shall be net 30 days from date of invoice. Prorated billings shall be permitted for partial shipments or work performed.

3.0 DRAWINGS

If Materials were designed by Company, any drawings furnished for Purchaser's evaluation may contain confidential information, and may not be copied or used for any other purpose. All such drawings will be returned upon Company's request. If Materials are in-kind replacements to be fabricated from Purchaser's drawings, the Purchaser shall furnish to the Company all information, instructions and details requisite for execution of the work.

4.0 TRANSPORTATION

Unless otherwise specified in the Company's quotation, all shipments shall be made F.O.B point of origin. Unless otherwise provided, the price is exclusive of freight charges, which will be to Purchaser's account. The type of transportation and the routing shall be decided by Purchaser. Unloading, hauling and handling between the points of delivery and job site shall be Purchaser's responsibility.

5.0 TIME OF SHIPMENT DELIVERY

All shipments or delivery dates either referenced by the Company or requested by the Purchaser shall be interpreted to mean "estimated" shipment or delivery dates only, and shall not be construed as falling within the meaning of "time is of the essence". In no event shall the Company be liable for any loss or damage resulting from delays in the performance of the work.

6.0 DELAYS AND FORCE MAJEURE

The Company shall not be liable for any expense, loss or damage for failure to supply materials or supervision as required because of fire, flood, Acts of God, strikes, labor shortages or disputes, riots, act of terrorism, thefts, accidents, transportation delays, acts or failure to act of Government or purchaser or any other cause whatsoever, whether similar or dissimilar to the above, beyond the reasonable control of the Company. In the event of such delay, the time of completion and contract price will be subject to adjustment.

7.0 TAXES

Unless otherwise provided, the price stated in the Company's quotation is exclusive of any applicable sales, use, ownership, excise or other similar taxes. If the Company is required by law to collect and/or pay any such tax, the Purchaser shall reimburse the Company for the full amount of such payment. Rulings of authorities in charge of the administration of such law that a tax is payable shall be final and binding upon the Purchaser.

8.0 WARRANTY/REMEDY

The Company warrants to the original purchaser its materials and workmanship against detrimental defects. The warranty duration shall be one year from first use, but in no event longer than 18 months from shipment.

THE COMPANY MAKES NO OTHER REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES INCLUDING THE WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

In the event of a detrimental defect in materials or workmanship, the Company's sole liability and Purchaser's exclusive remedy for breach of said warranty or for other claims arising under this warranty for any cause whatsoever, including negligence, irrespective of whether such defects or claims are discoverable or latent shall be, at the Company's option, to repair, on a straight time basis, or provide replacement parts. Removal and reinstallation expense and/or work and transportation costs are not part of this warranty and are to Purchaser's account. Purchaser may not backcharge the Company for warranty claims without the Company's prior written consent. Equipment repaired, rebuilt or modified by Purchaser or other third parties without Company's consent carries no warranty, either express or implied. This warranty does not cover the effects of normal wear or abuse of the equipment, abrasion, erosion or corrosion. The company does not warrant that the operation of the equipment will comply with any laws or regulations governing environmental impact.

This warranty is conditioned upon prompt notice of the particular detrimental defects within ten days of discovery, proper use and maintenance of the equipment, reasonable access to the Company to inspect the equipment and no further damage to the equipment from acts of Purchaser or third parties after discovery of the defect.

9.0 CHANGE ORDERS

Without invalidating the contract, the Purchaser may order changes in the work by altering, adding to or deducting from the work, or to add correlated work not covered by the contract, or to make provision for changed conditions of this contract. All such changes in the work shall be authorized by written change order and shall be approved by both parties. If any revision necessitates a price or time adjustment, the contract will be amended accordingly.

10.0 COMPANY REPRESENTATIVES (if included in original scope or added by Purchaser)

Any representative provided by the Company shall perform the service in an advisory or consulting capacity and on a "reasonable efforts" basis. The representative may give reasonably complete instruction, but shall not exercise supervision. No Company representative is licensed or authorized by the Company to operate equipment, and shall not be requested to do so by Purchaser..

11.0 TITLE AND RISK OF LOSS

Title to the equipment delivered or placed into storage will pass to Purchaser upon receipt of payments, except that the Company shall retain a security interest in any equipment not paid for in full. The risk of loss or damage to the equipment shall pass to Purchaser at the f.o.b. point.

12.0 PATENTS

To the extent that any goods furnished hereunder are made to Purchaser's specifications, Purchaser shall at its expense defend any suit brought against the Company based on a claim that such goods infringe any United States patent claims, provided that Purchaser is given prompt notice of such claim and full cooperation of the Company to defend and compromise such claim. In any such suit, Purchaser shall pay all costs and damage awarded against the Company.

13.0 SERVICE AND OPERATING INSTRUCTIONS

Service guides and operating instructions, if required to be furnished, are to assist licensed operators in the use of the equipment furnished by the Company. They are not intended to cover every possible contingency or variation in the equipment, but rather to complement the judgement of the licensed operator whose duty it is to make the final decision in a particular circumstance.

14.0 LIMITATION OF LIABILITY

The Company's liability on all claims of any kind (excluding death or bodily injury), whether based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise, for all losses or damages arising out of, connected with, or resulting from this order, or from the performance or breach thereof, or from any equipment or services covered by or furnished under this order or any extension or expansion thereof (including remedial warranty efforts), shall in no case exceed the contract price. Except as to title all such liability shall terminate upon the expiration of the warranty period. In no event, whether based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise, shall the Company, its employees, subcontractors and suppliers be liable for special, incidental, indirect, exemplary or consequential damages under any cause or form of action whatsoever. This Limitation of Liability shall prevail over any conflicting or inconsistent provision contained in any item or document which comprises the contract. The remedies provided herein are exclusive.

15.0 GOVERNING LAW

The validity, construction and performance of this agreement shall be governed by the law of the Commonwealth of Massachusetts.

16.0 ARBITRATION

All disputes arising in connection with the Agreement shall be finally settled by arbitration. The arbitration shall be held at Worcester, Massachusetts, and conducted in accordance with the rules of the American Arbitration Association. Judgment upon the award rendered may be entered in any court having jurisdiction or application may be made to such court for judicial acceptance of the award and an order of enforcement, as the case may be.

17.0 CANCELLATION

The Company may terminate this agreement by written notice to the Purchaser if a petition is filed by or against the Purchaser under the bankruptcy laws, or if the Purchaser makes a general assignment for the benefit of its creditors, or if a receiver is appointed for any property of the Purchaser, or for Purchaser's willful failure without cause to make payment on any application for payment within thirty (30) days from submission thereof. Such termination shall be without prejudice to any of the legal rights and remedies the Company may possess to recover any amounts due under the contract. In the event the Purchaser wishes to cancel for convenience, Purchaser shall pay the Company the following charges, which sum shall be greater of either: (a) the expense incurred by the Company to date of cancellation, including costs incidental to Purchaser's cancellation, plus overhead and profit; or (b) fifteen percent (15%) of the total contract price.

18.0 ENTIRE AGREEMENT

There are no understandings between the parties hereto as to the subject matter of this agreement other than as set forth herein. Any provisions of a purchase order or specification which may be issued hereafter shall not be binding on the parties unless duly approved in writing by an authorized representative of each party.

Revised: 11/07/2001

Babcock Borsig Power, Inc.
TERMS AND CONDITIONS

COMPANY REPRESENTATIVE, ENGINEERING AND TEAM INSPECTION SERVICES

1.0 GENERAL

Babcock Borsig Power, Inc. ("Company") shall provide the services of Company Personnel to inspect or advise and consult with the Purchaser regarding Purchaser's equipment and/or furnish engineering personnel to perform technical services, as specified in the Company's proposal.

2.0 SCOPE AND PERFORMANCE OF SERVICE

The scope of the service, including the extent and nature of any equipment inspection, shall be as defined in the Company's proposal. Work or services not specifically included in the Company's proposal, or inspection of equipment not specifically mentioned therein, is expressly excluded from the Company's responsibility.

A Company representative that advises and consults with Purchaser's representatives may give reasonably complete instructions, but shall not supervise nor be deemed to be exercising supervision.

The Company shall perform its work on a "reasonable efforts" basis.

THERE ARE NO WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR FOR THE USE OR NON-USE OF ANY INFORMATION, RESULTS, CONCLUSIONS OR RECOMMENDATIONS CONTAINED IN ANY REPORTS PROVIDED HEREUNDER.

3.0 CLAIMS/REMEDY

In the event of a claim regarding performance of the Company's services, the Company will examine the matter to ascertain if any defects, errors or omissions have occurred. On determination by the Company of its fault, the Company, at its sole option, shall either correct or re-perform such portion of services as may be necessary, or refund that portion of the original charge attributable to the services in question. The foregoing is the sole and exclusive remedy of the Purchaser for any actual defect, error or omission in the services performed by the Company.

4.0 TIME OF PERFORMANCE

All completion dates shall be interpreted to mean "estimated" completion dates only, and shall in no way be construed as falling within the meaning of "time is of the essence". In no event shall the Company be liable for any loss or damage resulting

from delays in the performance of the work.

5.0 NATURE OF THE SERVICE

The Company's performance of the work shall be conclusively deemed to constitute the rendering of a service and shall not be construed to constitute the sale of goods, materials, or products within the meaning of the Uniform Commercial Code.

6.0 TERMS OF PAYMENT

The price for services shall be as specified in the Company's proposal or on Company rate sheet. Unless otherwise agreed, payment terms are net 30 days from the date of invoice. Invoices shall be submitted upon completion of the services and submission of any requested reports unless progress billings are utilized.

7.0 PURCHASER'S FACILITY - AVAILABILITY, RESPONSIBILITY

Availability of the subject equipment on the agreed upon start date is Purchaser's responsibility. Purchaser shall pay the Company for any on site waiting time experienced by Company personnel due to lack of availability. Purchaser shall have a representative available at all time during the performance of Company's service. Unless otherwise notified in writing, such representative is deemed to have authority to act on behalf of Purchaser.

No Company Representative is licensed to operate Purchaser's equipment, and shall not be requested to do so. Purchaser shall have complete responsibility for the operation of its equipment and shall indemnify and save Company harmless against all loss, expense and damage resulting from personal injury or property damage arising out of operation or use of such equipment.

8.0 LIMITATION OF LIABILITY

The Company's liability on all claims of any kind (excluding death or bodily injury) for all losses or damages arising out of, connected with, or resulting from this order, or from the performance or breach thereof shall in no case exceed the contract price.

In no event, whether based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise, shall the Company, its employees, subcontractors and suppliers be liable for special, incidental, indirect, exemplary or consequential damages.

This Limitation of Liability shall prevail over any conflicting or inconsistent provision contained in any item or document which comprises the contract.

9.0 DESIGNS, PATENTS AND PRODUCTS

All designs, patents and products resulting directly or indirectly from this service shall be the exclusive property of the Company.

10.0 FORCE MAJEURE

Neither party shall be liable to the other for failure to perform due to so-called Acts of God or any other cause beyond its reasonable control and without its fault or negligence.

11.0 TERMINATION

The Purchaser may terminate the service at any time upon giving the Company written notice within a reasonable time. In such event, Purchaser shall pay for work performed, including expenses, overhead and profit.

12.0 GOVERNING LAW

The validity, construction and performance of this Agreement shall be governed by the law of the Commonwealth of Massachusetts.

Revised: 11/16/2000

BABCOCK BORSIG POWER

Attachment 1
FY '02 STANDARD COMPANY REPRESENTATIVE RATES
EFFECTIVE: 10/1/01 through 9/30/02

	SERVICES	PER DIEM BASE RATES
A.	Engineering Manager	\$ 1,200.00
B.	Staff Engineer	\$ 1,150.00
C.	Senior Metallurgist	\$ 1,100.00
D.	Metallurgist	\$ 1,050.00
E.	Senior Engineer	\$ 1,050.00
F.	Engineer	\$ 1,000.00
G.	Project Manager	\$ 1,050.00
H.	Service Engineer (Field)	\$ 1,000.00
I.	Senior Designer	\$ 945.00
J.	Erection Advisor	\$ 1,000.00
K.	Project Scheduler	\$ 675.00

- Above rates are for an 8 hour work day (Monday through Friday), or portion thereof, which will then be prorated at an hourly rate.
- Report preparation time will be invoiced at the straight time rate for hours expended.
- Premium time is all time worked in excess of 8 hours/work day, plus all time worked on Saturdays, Sundays or Holidays.
 - ☐ Premium time is 150 percent of base rate for Saturdays and time worked in excess of an 8 hour work day prorated at an hourly rate, based on the daily rate.
 - ☐ Premium time for service on Sundays or Company holidays is 200 percent of base rate prorated hourly.
 - ☐ No overtime will be worked unless Purchaser authorizes and agrees to pay for such work.
- A ten percent (10%) discount will be applied to the invoice if over fifteen consecutive days of field engineering services are used. [discount on days 16-30]. A fifteen percent (15%) discount will be applied to the invoice if over thirty consecutive (30) days of service are used. [discount on days over 30]. Discounts will be applied to service charges (not travel and living).
- Transportation including air, train, bus, rental car, or taxi will be billed at cost. Private automobile mileage will be invoiced at 36.5 cents/mile. Travel time to and from the jobsite will be invoiced at the Per Diem Rates.
- Standard living expense, telephone, or other miscellaneous costs will be invoiced at \$100.00/day unless actual expenses incurred are greater. In that case, actual expenses will be invoiced and substantiated by receipts.
- Subcontractors and other material charges will be invoiced at cost-plus 15 percent.
- Instrumentation (HVT probes and Gas Analyzers, etc.): Invoiced at cost, plus shipping and handling.
- Minimum service charge is 8 hours base rate.
- Terms:** Payable 30 days after receipt of invoice.

OVERSEAS PER DIEM RATES AND TERMS AND CONDITIONS

Provided upon request.

Issued: 08/21/97
Revised: 01/28/98
Revised: 10/01/98
Revised: 09/17/99
Revised: 10/01/00
Revised: 10/01/01
Revised: 1/08/02

IP12_002833

BABCOCK BORSIG POWER

May 10, 2002

Intermountain Power Service Corp.
850 W. Brush Wellman Road
Delta, UT 84624-9546

ATTN: Mr. James Nelson

RE: Rotary Throat Retrofit Project
BBPI Proposal No. 501103-Rev. 1

Dear Mr. Nelson:

In accordance with our e-mail of 4/3/02, and subsequent telephone conversations with your Mr. Phil Hailes, we are pleased to submit, for your consideration, three (3) copies of our proposal to retrofit a state-of-the-art Babcock Borsig Power rotating throat assembly to one of your existing MPS 89G pulverizers.

Our proposal to provide the necessary engineering, conversion kit materials, and field supervision to accomplish this retrofit is presented in two phases. Phase I test components fabricated from plain carbon steel and Phase II final design components fabricated from special wear resistant materials. Installation and performance testing will be Intermountain's responsibility.

Our objective is to improve existing mill performance focusing on the following criterion guidelines:

- 62 TPH (95% feeder speed) mill throughput
- Coal fineness of 73%± thru 200 mesh
- Pressure differential not greater than 21" iwc between primary air inlet and classifier inlet (Does not include classifier dP)
- Power consumption less than or equal to 70 Amps of main motor
- Minimize reject rate

Pre and post retrofit mill baseline data will be provided by IP to develop a quantitative comparison of performance. If mill performance improvements are demonstrated to the satisfaction of IP, BBPI will invoice IP the cost of the Phase I test program as follows:

Babcock Borsig Power, Inc.
Energy Systems and Services Division

Mailing Address:

Post Office Box 15040
Worcester, MA 01615-0040

Shipping Address:

5 Neponset Street
Worcester, MA 01606

Telephone: (508) 852-7100
Fax: (508) 852-7548

www.bbpwr.com

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Intermountain Power Service Corp.

May 10, 2002

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- Field trip by (2) BBPI fuel burning engineers to obtain operational data, dimensions and arrangement drawings of the subject retrofit MPS 89G mill. IP will provide or assist BBPI to collect/verify relevant existing mill dimensions and drawings, which may include to open and prepare the mill for inspection and table measurements. The mill selected should be the one intended to receive the new rotating throat.
- Preparation of fabricated rotating throat retrofit kit drawings.
- One (1) set of multiple rotating throat bolted/welded segments fabricated from carbon steel will be provided with associated bolting hardware, including recommended field welding procedures to install and fuse adjacent radial segments together.
- One (1) service engineer for (6) days [(2) days to witness baseline testing, (2) days to advise and consult during field assembly, and (2) days to witness final performance testing.] Per diem optional.

The budgetary cost for Phase I program is: \$17,500 F.O.B. Delta, Utah.
(\$15,000 material and \$2,500 for witness testing)

The program schedule will be as follows:

- 1 Week Mill Field Inspection and Historical Data Gathering
- 1 Week Letter Type Report Preparation
- 2-3 Weeks Drawing Preparation
- 1-2 Weeks Drawings review and approval by IP, and finalize drawings
- 3-4 Weeks Shop Fabrication
- 1 Week Delivery
- 1 Week Installation by IP
- 10-12 Weeks Total Phase I Program

On the basis of a successful Phase I program, IP can exercise the option to replace the carbon steel rotating throat with special wear resistant materials.

The materials and services to accomplish Phase II will be as follows:

- Preparation of final rotating throat retrofit kit drawings.
- Develop new patterns, if necessary.

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Intermountain Power Service Corp.

May 10, 2002

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- Provide one (1) set of multiple rotating throat bolted/welded segments manufactured from special wear resistant materials with necessary bolting hardware.
- One (1) BBPI service engineer for (4) days [(2) days to advise and consult during field assembly, and (2) days to witness performance test.] Per diem optional.

The budgetary cost for Phase II with wear resistant material:

\$25,000, If fabricated (\$22,500 material plus \$2,500 for witness testing)

\$29,000, If cast (\$27,000 material plus \$2,500 for witness testing)

All pricing F.O.B. Delta, Utah.

The program schedule will be as follows:

	<u>If Cast</u>	<u>If Fabricated</u>
• Drawing Preparation	2-3 Weeks	2-3 Weeks
• Drawing Review and Approval	1-2 Weeks	1-2 Weeks
• Pattern Development	3-4 Weeks	N/A
• Cast /Fabricated	9-12 Weeks	4-5 Weeks
• Delivery	1 Week	1 Week
• Installation	1 Week	1 Week
 Total Estimated Phase II Program	 17-23 Weeks	 9-12 Weeks

Please refer to attached sketch illustrating an example of a BBP rotating throat design. The throat design directly impacts mill performance such as mill pressure differential, primary air and coal distribution in the grinding zone, and pre-classification of pulverized coal. Babcock Borsig Power has conducted throat optimization studies to achieve enhancement in the throat performance with lower pressure drop and better primary air and coal distribution. Currently, it is our engineering standard design to provide rotating throats with all new MPS mills. The rotating throat distributes primary air and coal flows more evenly and minimizes the impact of throat wear on the mill performance by producing more uniform wear on the throat.

Our standard "Short Form Materials" Terms and Conditions have been attached for your consideration, as well as service per diem terms and rates for out of scope days.

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Intermountain Power Service Corp.

May 10, 2002

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Our Mr. Craig Penterson, Manager of Fuel Equipment Design, will be in Oberhausen, Germany the week of May 12, 2002 to discuss your specific application, in detail. However, the engineering meeting, in Germany, should not preclude us from dispatching two (2) fuel burning engineers to inspect an open mill, take measurements, and compile historical operating data. Please advise, at your earliest convenience, when we can perform this inspection to verify actual table dimensions. We anticipate a conference call on Monday, April 29th to discuss field trip protocol and arrangements.

If you have any questions, please do not hesitate to contact us. Our Mr. Tom Martinko will be contacting you subsequently to entertain any questions you may have regarding our proposal.

Thank you for your continued interest in Babcock Borsig Power, world-class leaders in coal size reduction technology.

Very truly yours,

Babcock Borsig Power, Inc.



Robert V. Faia
National Direction of
Business Development
Services Division

RVF/pjh

Cc: B. Leblanc
C. Penterson
K. Toupin
Q. Lin
K. Davis
T. Martinko
B. Kennedy

IP12_002837

Babcock Borsig Power, Inc.
TERMS AND CONDITIONS - MATERIALS
(SHORT FORM)

1.0 GENERAL

Babcock Borsig Power, Inc. hereinafter called "Company" shall perform, and the Purchaser agrees to purchase, the proposed equipment ("equipment") in accordance with the terms and conditions contained herein.

2.0 PRICE AND TERMS OF PAYMENT

The price is as specified in the Company's proposal or quotation. Unless otherwise agreed, the price shall be valid only for sixty (60) days from the date submitted and terms of payment shall be net 30 days from date of invoice. Prorated billings shall be permitted for partial shipments or work performed.

3.0 DRAWINGS

If Materials were designed by Company, any drawings furnished for Purchaser's evaluation may contain confidential information, and may not be copied or used for any other purpose. All such drawings will be returned upon Company's request. If Materials are in-kind replacements to be fabricated from Purchaser's drawings, the Purchaser shall furnish to the Company all information, instructions and details requisite for execution of the work.

4.0 TRANSPORTATION

Unless otherwise specified in the Company's quotation, all shipments shall be made F.O.B point of origin. Unless otherwise provided, the price is exclusive of freight charges, which will be to Purchaser's account. The type of transportation and the routing shall be decided by Purchaser. Unloading, hauling and handling between the points of delivery and job site shall be Purchaser's responsibility.

5.0 TIME OF SHIPMENT DELIVERY

All shipments or delivery dates either referenced by the Company or requested by the Purchaser shall be interpreted to mean "estimated" shipment or delivery dates only, and shall not be construed as falling within the meaning of "time is of the essence". In no event shall the Company be liable for any loss or damage resulting from delays in the performance of the work.

6.0 DELAYS AND FORCE MAJEURE

The Company shall not be liable for any expense, loss or damage for failure to supply materials or supervision as required because of fire, flood, Acts of God, strikes, labor shortages or disputes, riots, act of terrorism, thefts, accidents, transportation delays, acts or failure to act of Government or purchaser or any other cause whatsoever, whether similar or dissimilar to the above, beyond the reasonable control of the Company. In the event of such delay, the time of completion and contract price will be subject to adjustment.

7.0 TAXES

Unless otherwise provided, the price stated in the Company's quotation is exclusive of any applicable sales, use, ownership, excise or other similar taxes. If the Company is required by law to collect and/or pay any such tax, the Purchaser shall reimburse the Company for the full amount of such payment. Rulings of authorities in charge of the administration of such law that a tax is payable shall be final and binding upon the Purchaser.

8.0 WARRANTY/REMEDY

The Company warrants to the original purchaser its materials and workmanship against detrimental defects. The warranty duration shall be one year from first use, but in no event longer than 18 months from shipment.

THE COMPANY MAKES NO OTHER REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES INCLUDING THE WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

In the event of a detrimental defect in materials or workmanship, the Company's sole liability and Purchaser's exclusive remedy for breach of said warranty or for other claims arising under this warranty for any cause whatsoever, including negligence, irrespective of whether such defects or claims are discoverable or latent shall be, at the Company's option, to repair, on a straight time basis, or provide replacement parts. Removal and reinstallation expense and/or work and transportation costs are not part of this warranty and are to Purchaser's account. Purchaser may not backcharge the Company for warranty claims without the Company's prior written consent. Equipment repaired, rebuilt or modified by Purchaser or other third parties without Company's consent carries no warranty, either express or implied. This warranty does not cover the effects of normal wear or abuse of the equipment, abrasion, erosion or corrosion. The company does not warrant that the operation of the equipment will comply with any laws or regulations governing environmental impact.

This warranty is conditioned upon prompt notice of the particular detrimental defects within ten days of discovery, proper use and maintenance of the equipment, reasonable access to the Company to inspect the equipment and no further damage to the equipment from acts of Purchaser or third parties after discovery of the defect.

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To the extent that any goods furnished hereunder are made to Purchaser's specifications, Purchaser shall at its expense defend any suit brought against the Company based on a claim that such goods infringe any United States patent claims, provided that Purchaser is given prompt notice of such claim and full cooperation of the Company to defend and compromise such claim. In any such suit, Purchaser shall pay all costs and damage awarded against the Company.

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Revised: 11/07/2001

Babcock Borsig Power, Inc.
TERMS AND CONDITIONS

COMPANY REPRESENTATIVE, ENGINEERING AND TEAM INSPECTION SERVICES

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The Company shall perform its work on a "reasonable efforts" basis.

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In the event of a claim regarding performance of the Company's services, the Company will examine the matter to ascertain if any defects, errors or omissions have occurred. On determination by the Company of its fault, the Company, at its sole option, shall either correct or re-perform such portion of services as may be necessary, or refund that portion of the original charge attributable to the services in question. The foregoing is the sole and exclusive remedy of the Purchaser for any actual defect, error or omission in the services performed by the Company.

4.0 TIME OF PERFORMANCE

All completion dates shall be interpreted to mean "estimated" completion dates only, and shall in no way be construed as falling within the meaning of "time is of the essence". In no event shall the Company be liable for any loss or damage resulting

from delays in the performance of the work.

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7.0 PURCHASER'S FACILITY - AVAILABILITY, RESPONSIBILITY

Availability of the subject equipment on the agreed upon start date is Purchaser's responsibility. Purchaser shall pay the Company for any on site waiting time experienced by Company personnel due to lack of availability. Purchaser shall have a representative available at all time during the performance of Company's service. Unless otherwise notified in writing, such representative is deemed to have authority to act on behalf of Purchaser.

No Company Representative is licensed to operate Purchaser's equipment, and shall not be requested to do so. Purchaser shall have complete responsibility for the operation of its equipment and shall indemnify and save Company harmless against all loss, expense and damage resulting from personal injury or property damage arising out of operation or use of such equipment.

8.0 LIMITATION OF LIABILITY

The Company's liability on all claims of any kind (excluding death or bodily injury) for all losses or damages arising out of, connected with, or resulting from this order, or from the performance or breach thereof shall in no case exceed the contract price.

In no event, whether based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise, shall the Company, its employees, subcontractors and suppliers be liable for special, incidental, indirect, exemplary or consequential damages.

This Limitation of Liability shall prevail over any conflicting or inconsistent provision contained in any item or document which comprises the contract.

9.0 DESIGNS, PATENTS AND PRODUCTS

All designs, patents and products resulting directly or indirectly from this service shall be the exclusive property of the Company.

10.0 FORCE MAJEURE

Neither party shall be liable to the other for failure to perform due to so-called Acts of God or any other cause beyond its reasonable control and without its fault or negligence.

11.0 TERMINATION

The Purchaser may terminate the service at any time upon giving the Company written notice within a reasonable time. In such event, Purchaser shall pay for work performed, including expenses, overhead and profit.

12.0 GOVERNING LAW

The validity, construction and performance of this Agreement shall be governed by the law of the Commonwealth of Massachusetts.

Revised: 11/16/2000

BABCOCK BORSIG POWER

Attachment 1
FY '02 STANDARD COMPANY REPRESENTATIVE RATES
EFFECTIVE: 10/1/01 through 9/30/02

	SERVICES	PER DIEM BASE RATES
A.	Engineering Manager	\$ 1,200.00
B.	Staff Engineer	\$ 1,150.00
C.	Senior Metallurgist	\$ 1,100.00
D.	Metallurgist	\$ 1,050.00
E.	Senior Engineer	\$ 1,050.00
F.	Engineer	\$ 1,000.00
G.	Project Manager	\$ 1,050.00
H.	Service Engineer (Field)	\$ 1,000.00
I.	Senior Designer	\$ 945.00
J.	Erection Advisor	\$ 1,000.00
K.	Project Scheduler	\$ 675.00

- Above rates are for an 8 hour work day (Monday through Friday), or portion thereof, which will then be prorated at an hourly rate.
- Report preparation time will be invoiced at the straight time rate for hours expended.
- Premium time is all time worked in excess of 8 hours/work day, plus all time worked on Saturdays, Sundays or Holidays.
 - Premium time is 150 percent of base rate for Saturdays and time worked in excess of an 8 hour work day prorated at an hourly rate, based on the daily rate.
 - Premium time for service on Sundays or Company holidays is 200 percent of base rate prorated hourly.
 - No overtime will be worked unless Purchaser authorizes and agrees to pay for such work.
- A ten percent (10%) discount will be applied to the invoice if over fifteen consecutive days of service are used. [discount on days 16-30]. A fifteen percent (15%) discount will be applied to the invoice if over thirty consecutive (30) days of service are used. [discount on days over 30]. Discounts will be applied to service charges (not travel and living).
- Transportation including air, train, bus, rental car, or taxi will be billed at cost. Private automobile mileage will be invoiced at 36.5 cents/mile. Travel time to and from the jobsite will be invoiced at the Per Diem Rates.
- Standard living expense, telephone, or other miscellaneous costs will be invoiced at \$100.00/day unless actual expenses incurred are greater. In that case, actual expenses will be invoiced and substantiated by receipts.
- Subcontractors and other material charges will be invoiced at cost-plus 15 percent. Written approval from the client will be obtained for any charges exceeding \$500.00.
- Instrumentation (HVT probes and Gas Analyzers): Invoiced at cost, plus shipping and handling.
- Minimum service charge is 8 hours base rate.
- Terms:** Payable 30 days after receipt of invoice.

OVERSEAS PER DIEM RATES AND TERMS AND CONDITIONS

Provided upon request.

Issued: 08/21/97
Revised: 01/28/98
Revised: 10/01/98
Revised: 09/17/99
Revised: 10/01/00
Revised: 10/01/01
Revised: 1/08/02

IP12_002845

BABCOCK BORSIG POWER

April 29, 2002

May 8
- Fran Owllette.
- Ivo Slezak.

Intermountain Power Service Corp.
850 W. Brush Wellman Road
Delta, UT 84624-9546

ATTN: Mr. James Nelson

RE: Rotary Throat Retrofit Project
BBPI Proposal No. 501103

Dear Mr. Nelson:

In accordance with our e-mail of 4/3/02, and subsequent telephone conversations with your Mr. Phil Hailes, we are pleased to submit, for your consideration, three (3) copies of our proposal to retrofit a state-of-the-art Babcock Borsig Power rotating throat assembly to one of your existing MPS 89G pulverizers.

Our proposal to provide the necessary engineering, conversion kit materials, and field supervision to accomplish this retrofit is presented in two phases. Phase I test components fabricated from plain carbon steel and Phase II final design components fabricated from special wear resistant materials. Installation and performance testing will be Intermountain's responsibility.

Our objective is to improve existing mill performance focusing on the following criterion guidelines:

- 35%
Tons per hour
- Amperes = 70 Amps.
- Coal fineness of 73%± thru 200 mesh
 - Increase coal throughput
 - Reduce mill pressure differential
 - Minimize reject rate
- 95%
25% coal or less?
- 75%
200 mesh
- 65 tons

- 95%
- 70%

Pre and post retrofit mill baseline data will be provided by IP to develop a quantitative comparison of performance. If mill performance improvements are demonstrated to the satisfaction of IP or are better than the performance achieved by the rotating throats supplied by Technomics, BBPI will invoice IP the cost of the Phase I test program as follows:

Babcock Borsig Power, Inc.
Energy Systems and Services Division

Mailing Address:

Post Office Box 15040
Worcester, MA 01615-0040

Shipping Address:

5 Neponset Street
Worcester, MA 01606

Telephone: (508) 852-7100

Fax: (508) 852-7548

www.bbpower.com

IP12_002846

- Field trip by (2) BBPI fuel burning engineers to obtain operational data, dimensions and arrangement drawings of the subject retrofit MPS 89G mill. IP will provide or assist BBPI to collect/verify relevant existing mill dimensions and drawings, which may include to open and prepare the mill for inspection and table measurements. The mill selected should be the one intended to receive the new rotating throat.
- Preparation of fabricated rotating throat retrofit kit drawings. *via contract control? Geometry?*
- One (1) set of multiple rotating throat bolted/welded segments fabricated from carbon steel will be provided with associated bolting hardware, including recommended field welding procedures to install and fuse adjacent radial segments together.
- One (1) service engineer for (6) days [(2) days to witness baseline testing, (2) days to advise and consult during field assembly, and (2) days to witness final performance testing.]

The budgetary cost for Phase I program is: \$29,875 F.O.B. Delta, Utah.
(\$21,875 material and \$8,000 service)

*High for
fabricated
Carbon
Steel.
Future
price?*

The program schedule will be as follows:

- 1 Week Mill Field Inspection and Historical Data Gathering
- 1 Week Letter Type Report Preparation
- 2-3 Weeks Drawing Preparation
- 1-2 Weeks Drawings review and approval by IP, and finalize drawings
- 3-4 Weeks Shop Fabrication
- 1 Week Delivery
- 1 Week Installation by IP
- 10-12 Weeks Total Phase I Program

*1 week of
testing?*

On the basis of a successful Phase I program, IP can exercise the option to replace the carbon steel rotating throat with special wear resistant materials.

The materials and services to accomplish Phase II will be as follows:

- Preparation of final rotating throat retrofit kit drawings.
- Develop new patterns, if necessary.

- Provide one (1) set of multiple rotating throat bolted/welded segments manufactured from special wear resistant materials with necessary bolting hardware.
- One (1) BBPI service engineer for (4) days [(2) days to advise and consult during field assembly, and (2) days to witness performance test.]

The budgetary cost for Phase II : To be determined.

The program schedule will be as follows:

	<u>If Cast</u>	<u>If Fabricated</u>
• Drawing Preparation	2-3 Weeks	2-3 Weeks
• Drawing Review and Approval	1-2 Weeks	1-2 Weeks
• Pattern Development	3-4 Weeks	N/A
• Cast /Fabricated	9-12 Weeks	4-5 Weeks
• Delivery	1 Week	1 Week
• Installation	1 Week	1 Week
Total Estimated Phase II Program	17-23 Weeks	9-12 Weeks

Please refer to attached sketch illustrating an example of a BBP rotating throat design. The throat design directly impacts mill performance such as mill pressure differential, primary air and coal distribution in the grinding zone, and pre-classification of pulverized coal. Babcock Borsig Power has conducted throat optimization studies to achieve enhancement in the throat performance with lower pressure drop and better primary air and coal distribution. Currently, it is our engineering standard design to provide rotating throats with all new MPS mills. The rotating throat distributes primary air and coal flows more evenly and minimizes the impact of throat wear on the mill performance by producing more uniform wear on the throat,

Our standard "Short Form Materials" Terms and Conditions have been attached for your consideration, as well as service per diem terms and rates for out of scope days.

Intermountain Power Service Corp.

April 29, 2002

Page 4

Our Mr. Craig Penterson, Manager of Fuel Equipment Design, will be in Oberhausen, Germany the week of May 12, 2002 to discuss your specific application, in detail. However, the engineering meeting, in Germany, should not preclude us from dispatching two (2) fuel burning engineers to inspect an open mill, take measurements, and compile historical operating data. Please advise, at

your earliest convenience, when we can perform this inspection to verify actual table dimensions. We anticipate a conference call on Monday, April 29th to discuss field trip protocol and arrangements.

If you have any questions, please do not hesitate to contact us. Our Mr. Tom Martinko will be contacting you subsequently to entertain any questions you may have regarding our proposal.

Thank you for your continued interest in Babcock Borsig Power, world-class leaders in coal size reduction technology.

Very truly yours,

Babcock Borsig Power, Inc.

Robert V. Faia *Kevin T. Park.*

Robert V. Faia
National Direction of
Business Development
Services Division

RVF/pjh

Cc: B. Leblanc
C. Penterson
K. Toupin
Q. Lin
K. Davis
T. Martinko
B. Kennedy

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